Volume XIX.
Number 4.

OCTOBER, 1900.

$3.00 Per Year,
Including Directory.
20 Cents Per Copy.

TEXTILE WORLD.

PERIODICAL DIV.

and
Industrial
Record.

* * *

THE Views of the Manufacturing Clothiers on the Tendencies for the next Heavy Weight Season (1901) are contained in this Number.

* * *

TABLE OF CONTENTS, - - Page 585
CLASSIFIED INDEX FOR BUYERS, - - Page 681

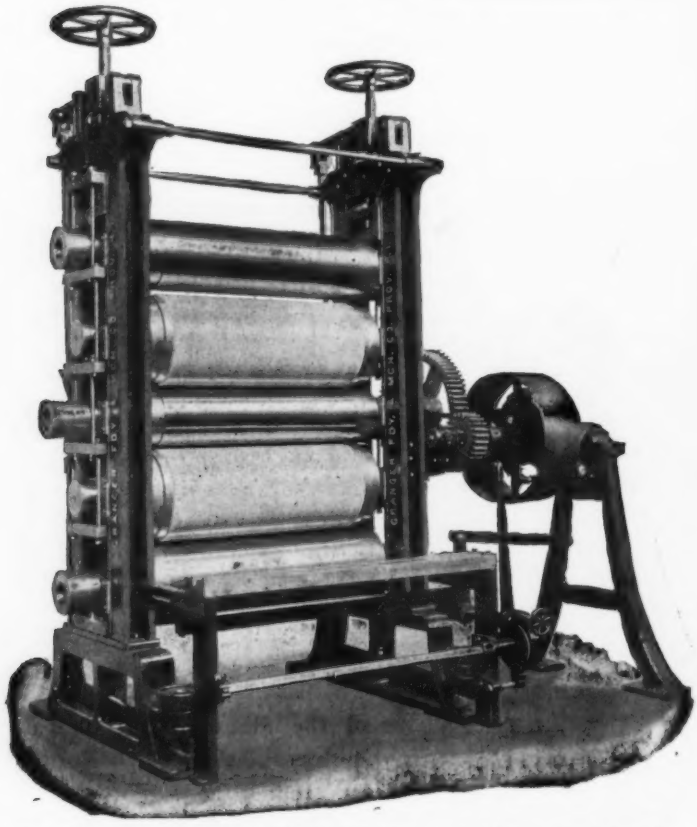
GUILD & LORD.
PUBLISHERS.

620 ATLANTIC AVENUE.
BOSTON, MASS.

Special Woolen Number.

Bleaching, Dyeing, Drying,

And Finishing Machinery.



CALENDERS, MANGLES AND ROLLS.

TENTERING MACHINES,
MERCERIZING MACHINES.

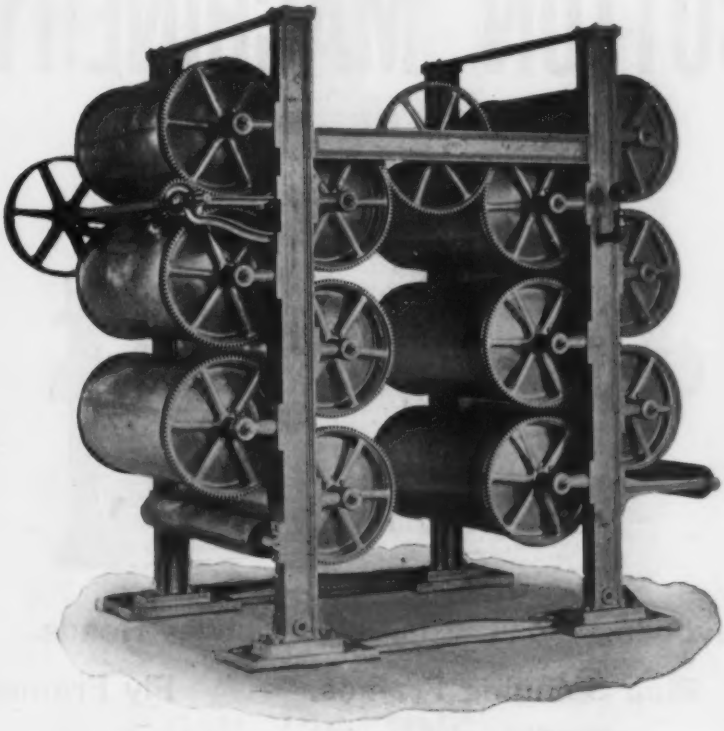
Granger Foundry and Machine Co.

PROVIDENCE, R. I.

BLEACHING, PRINTING, DYEING AND FINISHING

MACHINERY,

For Textile Fabrics



DRYING MACHINE—VERTICAL FRAME.

WITHOUT INTERMEDIATE CYLINDER.

H. W. BUTTERWORTH & SONS CO.,

PHILADELPHIA, PA.

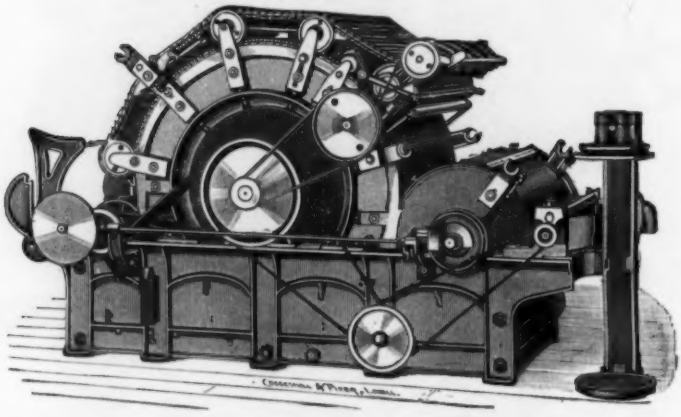
LOWELL MACHINE SHOP,

LOWELL, MASS.,

Builders of

COTTON MACHINERY

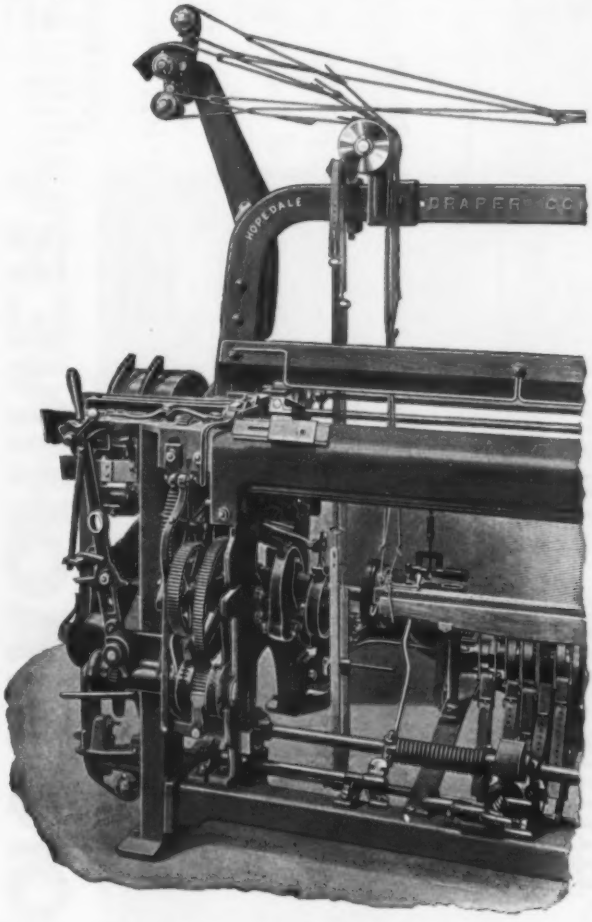
OF EVERY DESCRIPTION.



Revolving Flat Cards, Railway Heads,
Ring Spinning Frames, Fly Frames,
Drawing Frames, Spoolers, Warpers,
Slashers, Looms.

Worsted Machinery.

ILLUSTRATED CATALOGUES SENT ON APPLICATION.



A Few Details

Of one of our recent constructions in

NORTHROP LOOMS.

WE INVITE CORRESPONDENCE.

THE DRAPER COMPANY, Hopedale Mass.

THE WHITIN MACHINE WORKS,

Whitinsville, Mass.

Revolving Flat Carding Engines.

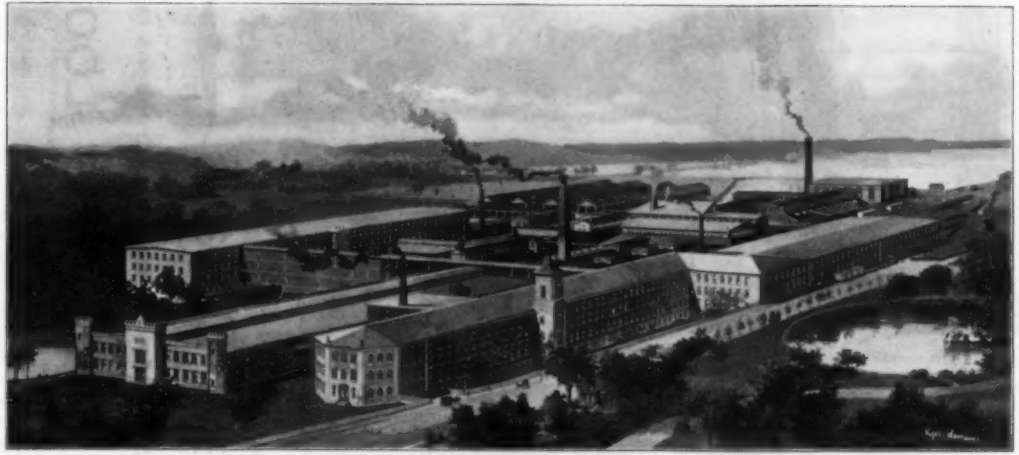
Silver Lap Machines.

Ribbon Lap Machines.

Combers.

Railway Heads.

Drawing Frames.



Spinning Frames.

Spoolers.

Twisters.

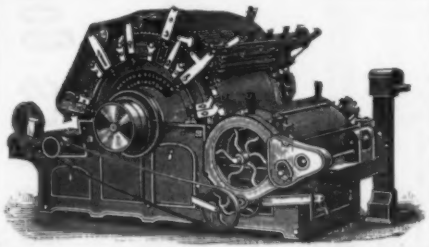
Reels.

Long Chain Quilling Machines.

Looms.

COTTON MACHINERY

Southern Agent, S. W. CRAMER, 38 So. Tryon St., Charlotte, N. C.



HOWARD & BULLOUGH

American Machine Company,

LIMITED,

PAWTUCKET, - R. I.

Revolving Flat Cards.

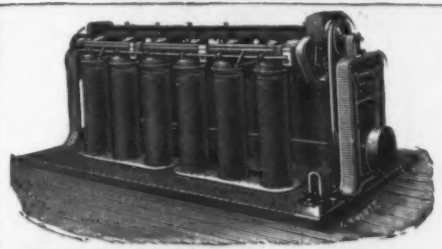
The Simplest and Most Accurate. Greatest Production. Best Quality. Least Waste.

OVER 18000 WORKING.

Electric Stop-Motion Drawing.

The quality of the sliver produced cannot be surpassed Waste, "single" and roller laps are prevented, production increased, and great saving effected.

OVER 56,000 IN OPERATION.



Bale Breakers. Feeders,

Combined Self-Feeding Openers,

Breaker and Finisher Lappers,

All made from entirely new patterns and containing many valuable patented improvements.

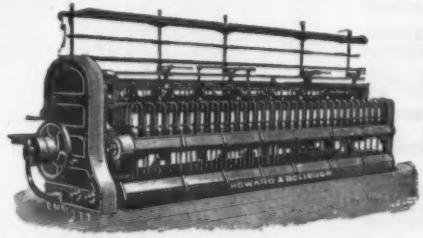
Slubbing, Intermediate, and Roving Machines.

New patented Differential motion, New Arrangement of Cone Drums, New System of Balancing top or bobbin rail, etc.

SPINNING FRAMES, CONE WINDERS,
TWISTERS, WARPERS AND SLASHERS.

All parts of above machines are made by special tools and are exact duplicates.

We Invite Investigation and Comparison.



THE FISHER CARD FEED

for WOOL, SHODDY, and COTTON, is

Second to None

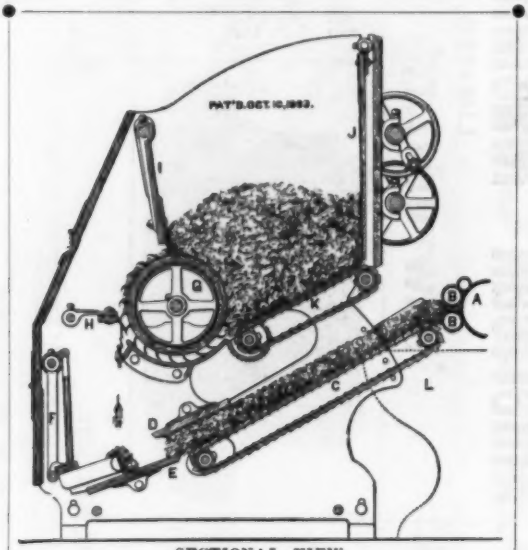
on the market. It holds more stock, requires less space, and needs no "attachments."

WOONSOCKET WORSTED MILLS,
Spinners of Worsted Yarns. Mixes and Fast Colors Specialties.
Boston Office, 570 Atlantic Avenue.

WOONSOCKET, R. I., March 4, 1896.

Messrs. Woonsocket Machine and Press Co., City,

GENTLEMEN—In answer to your inquiry of to day as to how we like the FISHER FEEDS would say that, after running one for three months and having put in four more since, is sufficient evidence that we consider the Fisher Feeds the best in the market to-day, and you are at liberty to bring any interested person into our mill to see them running and judge for themselves. Yours truly, WOONSOCKET WORSTED MILLS,
EDWIN FARNELL, Agent.



SECTIONAL VIEW.

THE FISHER CARD FEED is simple in construction, is strongly built, turns out even work, requires little changing, and feeds the same whether full or nearly empty.
It is built in all sizes and guaranteed as represented.

STAR WORSTED COMPANY,
Worsted Yarns.
C. T. Crocker, Pres. C. B. Smith, Treas.

FITCHBURG, MASS., March 4, 1896.

Woonsocket Machine and Press Co.,

GENTLEMEN—We have the pleasure to inform you that the two FISHER CARD FEEDS are working to our entire satisfaction, giving good results on both long and short wools.
Yours respectfully, STAR WORSTED COMPANY,
(Second order.) A. GARTH, Supt.

MANUFACTURED BY

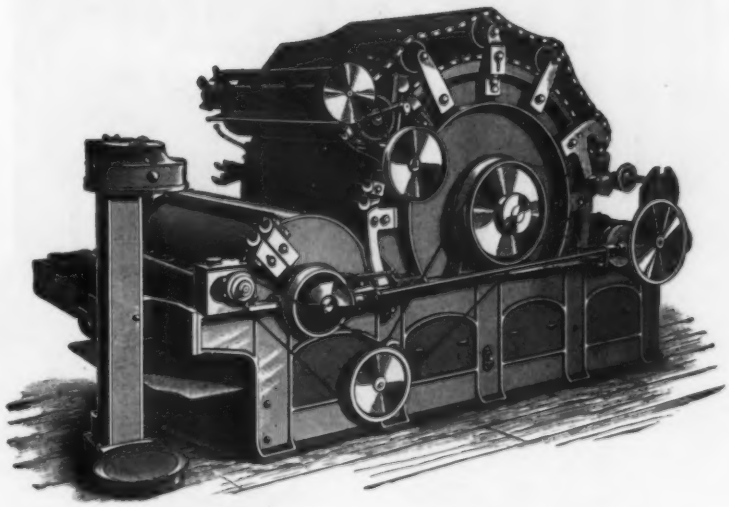
Woonsocket Machine and Press Co.,

WOONSOCKET, R. I.

MASON MACHINE WORKS,

TAUNTON, MASS.

COTTON MACHINERY



Cards, Combers, Lappers, Railway Heads, Drawing Frames, Spinning Frames, Mules and Looms,

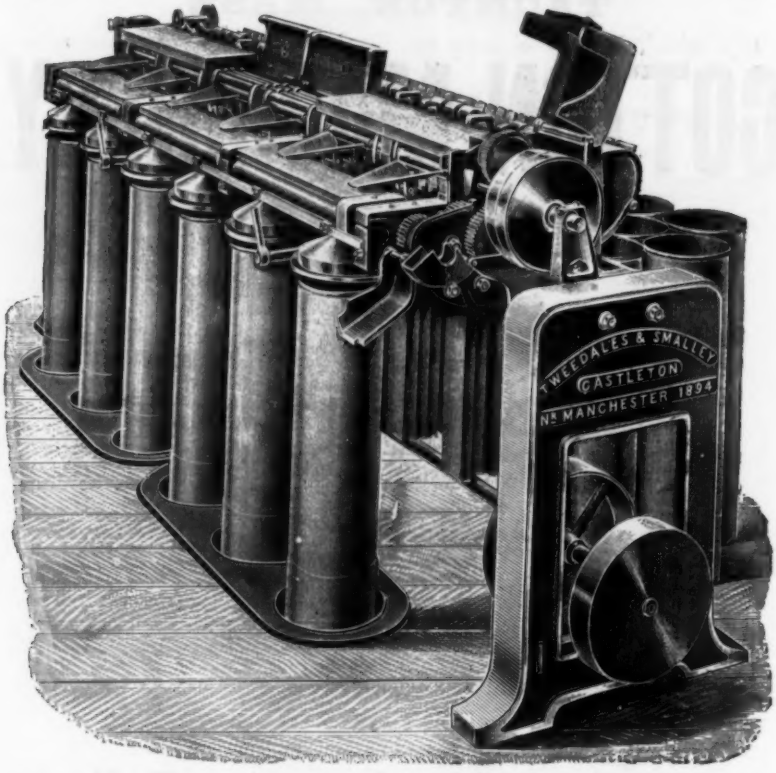
INCLUDING THE

Mason-Northrop Loom.

SOUTHERN AGENCY:

D. A. TOMPKINS CO., Charlotte, N. C.

COTTON MACHINERY



REVOLVING FLAT CARDS With New Doffer Slow Motion, Etc.
DRAWING FRAMES With Electric Stop Motion.
SELF ACTING MULES and TWINERS FOR Coarse, Medium and Fine Counts.
Spindles, Flyers, Card Clothing and Other Textile Sundries.
SLUBBING, INTERMEDIATE and ROVING FRAMES.

Tweedales & Smalley, Castleton, Eng.
Taylor, Lang & Co., Stalybridge, Eng.
William Ryder, Bolton, Eng.

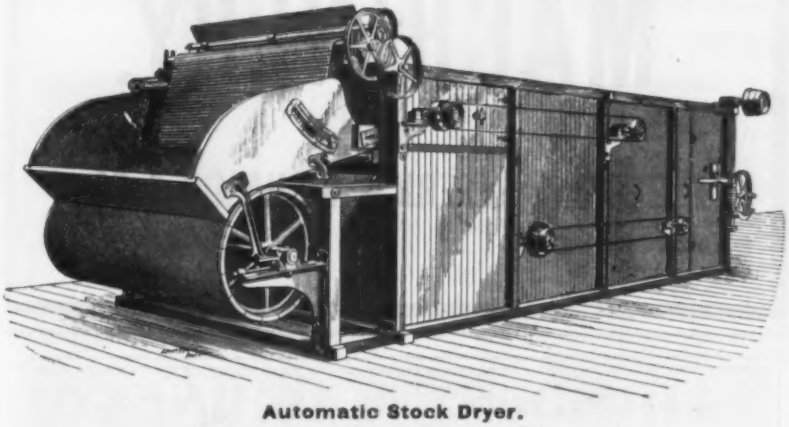
H. G. McKerrow & Co.

Sole Agents in United States and Canada.
Worthington Bldg., 31 State St., BOSTON, MASS.

"CYCLONE" DRYERS

For WOOL, COTTON STOCK, YARN, UNDERWEAR, STOCKINGS. : :

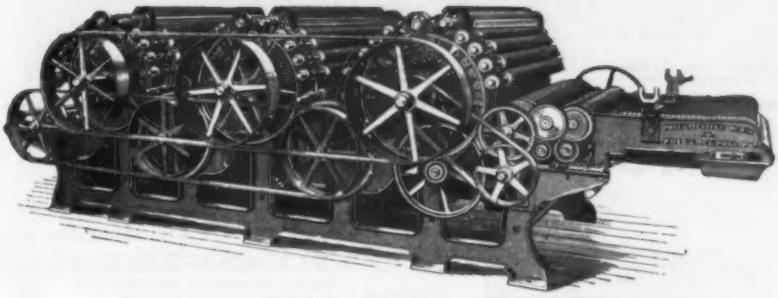
Carbonizing Machines. Yarn Scourers.



Automatic Stock Dryer.

GARNETT MACHINES,

BREASTS, BURRING MACHINES, FEED ROLLS, LICKERS-IN. . . .



Proctor Improved Double Fancy Garnett Machine.

PHILADELPHIA TEXTILE MACHINERY CO.,

2750-60 Hancock St.,

PHILADELPHIA, - - - PA.

WORSTED MACHINERY.

STODDARD, HASERICK, RICHARDS & CO.,

BRADFORD, ENG. BOSTON, MASS.

FAIRMOUNT MACHINE CO

22ND & WOOD STS. PHILADELPHIA.

THE LATEST AND BEST

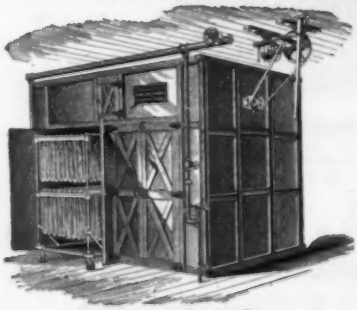
LOOMS, DOBBIES, HARNESS MOTIONS

BEAMING, SPOOLING, WINDING, DYEING AND SIZING MACHINERY.

POWER TRANSMITTING MACHINERY.

FREIGHT ELEVATORS. PATENT FRICTION CLUTCHES.

"HURRICANE" DRYERS



TRUCK YARN DRYER

—FOR—

WOOL, COTTON STOCK, YARN, STOCKINGS, UNDERWEAR, &c.

CARBONIZERS,

Yarn Scouring Machines.

"HURRICANE" FANS

for Ventilating and Drying.

Best in Construction. Lowest in Price.

Plans, Estimates and Catalogues cheerfully furnished.

PHILA. DRYING MACHINERY CO.,

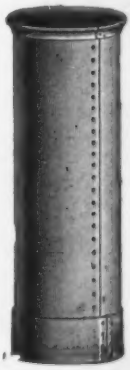
6721 GERMANTOWN AVE., PHILADELPHIA, PA.

WALRUS FIBRE MANF'G CO.
Fibre TRADE MARK Goods
BOSTON AVE.
MEDFORD
MASS.

ROVING CANS.

TRUCKS and BOXES.

MEDFORD, MASS.



Laminar Fibre Co.,

COLIN C. BELL, Pres. & Treas.

MANUFACTURER OF

ROVING CANS,

BOXES, TRUCKS,

Insulating Material,
Sheets, Tubes and
Manufactured Articles.

OFFICE AND FACTORY, TANNERY ST.,
NORTH CAMBRIDGE, MASS.

L. D. Tel. Arlington 44.

FINISHING MACHINERY for Brushing, Calendering, Drying, Dyeing, Fulling, Lapping, Rolling, Folding, Measuring, Pressing, Steaming, Shearing, Singeing, Blades, Spirals, Brushes furnished or repaired; Wire Looms, Forming Press for Febrille Goods, Metals or Hats. Perforating, Plate Printing, Engraving Machines, Paper Mill, Box Printers and Binders Machines.
GEO. C. HOWARD, 1783 Barker St., Phila., Pa

Hahn's Latest Improved Watchman's Time Detector.

This clock is adapted to 6, 12 or 18 stations and the keys are all different. A liberal allowance made for old detectors. For circulars, prices and further information address,

NANZ & CO.,
127 Duane Street,
New York.

VULCAN FIBRE ROVING CAN.

BODY—Vulcanized Fibre. SIDE SEAM—Riveted with Patented Clinched Rivets. RINGS—Tinned Steel, Brazed Joints, Curled Edges. BOTTOM—IXXX. Tin Star Corrugation: Fastened without the use of nails or screws, will not crack, warp or shrink and cannot come out. FINISH—Coated inside and out with moisture proof coating, handsome and smooth. WEIGHT—About one half pound per inch diameter. SIZE—All cans to an exact size, perfectly round and true. DURABILITY—Superior to any other can.

ALSO MANUFACTURERS OF HILL'S IXXX TIN AND GALVANIZED IRON DYE HOUSE CAN.

JAMES HILL M'F'G. CO.,

PROVIDENCE, - - - - - - - - R. I.

KILBURN, LINCOLN & CO.,

FALL RIVER, MASS.

MAKERS OF LOOMS FOR COTTON AND SILK WEAVING.

The new Arkwright Mill in Fall River is fitted out with 1100 of our **Heavy Pattern Looms**, especially adapted to run at high speed.

We are now building our **New High Speed Loom** with the **Northrop** continuous filling and warp-stop motions attached.

We Build Looms for Weaving all Grades of Goods.

BIRCH BROS.,
Somerville, Mass.
Mill Sewing Machines.

Sews any fabric, wet or dry, thin or thick ne stitch or coarse stitch.
SEND FOR CATALOGUE.
Bleaching, Dyeing and Finishing Machinery.

MORLEY RING

TRAVELERS

MORLEY BUTTON M'F'G CO.,
68 Essex Street,
BOSTON, MASS.

WHITINSVILLE
SPINNING RING C.
ESTABLISHED 1873.
WHITINSVILLE, MASS. U.S.A.
OUR PATENTED SPECIALTIES
DOUBLE RIBBED RINGS U.S. STANDARD. TRAVELER CLEARERS. METALIC BURNISH LIKE THAT PRODUCED BY THE TRAVELER.

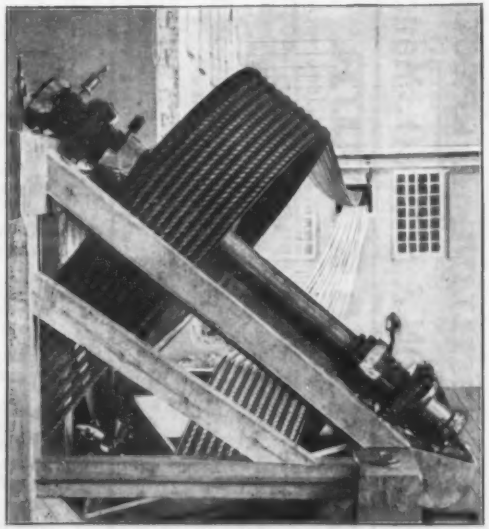
NATIONAL RING TRAVELER CO.
—MAKERS OF STANDARD—
SPINNING AND TWISTING TRAVELERS
OF EVERY DESCRIPTION.
PROVIDENCE, - - R. I.
A. CURTIS TINGLEY, Treasurer.

THE DODGE MANUFACTURING CO.

ENGINEERS. FOUNDERS. MACHINISTS.

BRANCHES: LONDON, 24 Garlick Hall | BOSTON, 137-139 Purchase St. | NEW YORK, 43-45 Dey St. | ATLANTA, GA., Prudential Bldg. | CHICAGO, 166-174 S. Clinton St. | CINCINNATI, 128 W. 3rd St.

MISHAWAKA, IND., U. S. A.



Transmitting power from one building to another by the Dodge Pat. American System Rope Transmission at plant of the N. Y. Mills, New York Mills, N. Y.

DESIGNERS AND BUILDERS OF THE

Dodge American System Manila Rope Transmission

ALSO MANUFACTURERS OF

Shafting, Couplings, Hangers, Self-Oiling Bearings, Fly-Wheels, Friction Clutches, etc.

Large Engineering Force in Constant Engagement.

Send your name for copy of next issue "POWER & TRANSMISSION," a Quarterly Review of Factory Economics and Power Transmission Engineering. Textile Mill owners contemplating new construction certainly need latest devices.

"Power and Transmission" Will Keep You Posted. 25 cts. a Year. Stamps Taken.

ANYTHING

Entire Outfits for New Mills, or small and odd items that you don't know just where to obtain, can be found at the

AMERICAN SUPPLY CO.
PROVIDENCE, R. I.

in Mill Supplies.

E. Dixon. Established 1876. F. M. Dixon.

DIXON LUBRICATING SADDLE CO., BRISTOL, R. I.

Sole Manufacturers of

Dixon's Patent Locking Saddles and Stirrups

The weight can be taken off and put on to the middle rolls, without stopping your frames, when long staple cotton is used.

The Stirrup is always in place.

No bent stirrup resting on rolls.

Manufacturers of all kinds of **Saddles, Stirrups and Levers.** Send for Samples and Prices.

Spinners' Supplies in general.

To WIND LINEN YARNS from the SKEIN

WRITE TO

W. W. ALTEMUS & SON,

2824 North 4th Street, - - - PHILADELPHIA, PA.

HAVE YOU TRIED

Cylinder Combers, Roller, Reed and Finger Brushes.

OUR

Cylinder Cloth and Shearer Brushes, Scrub, Bottle or Spindle Brushes.

REFILLING A SPECIALTY.

S. A. FELTON & SON CO., Manchester, N. H.

EVAN ARTHUR LEIGH,

Successor to E. A. Leigh & Company,

35 & 36 MASON BUILDING - - BOSTON, MASS.

Sole Agent in the United States and Canada for PLATT BROTHERS & COMPANY, Ltd., by far the largest makers in the world of

Cotton, Woolen and Worsted Machinery

For All Classes of Work.

MATHER & PLATT'S Dyeing and Finishing Machinery.
JOSEPH SYKES BROS.' Card Clothing for Cotton.
CRITCHLEY'S Card Clothing for Woolen and Worsted.
LOOMS of all description, etc

WATSON'S

HEDDLE FRAMES.
WIRE HEDDLES.
TEMPERED STEEL WIRE
STRIPPER CARDS.

ADDRESS L. S. WATSON MFG. CO., LEICESTER, MASS., FOR THE VERY BEST MADE

Warren Brothers Company

MANUFACTURERS
Coal Tar and Asphalt Roofing and Paving Materials, Varnishes, Etc.

CONTRACTORS
Metal, Asphalt and Coal Tar ROOFING.
Asphalt, Tar Concrete and Artificial Stone PAVING.

Concrete Engine Foundations, Floors, Waterproofing, Etc.

Telephone 4064 Boston. Factory, Cambridgeport.

ROOMS 40 to 45.
143 FEDERAL ST., BOSTON.

ELIJAH ASHWORTH,

MANUFACTURER OF

Card Clothing of Every Description

FALL RIVER, MASS. HENRY ASHWORTH, Agent.

BENJ. BOOTH. PAUL LANG.

BENJ. BOOTH & CO., LTD.,

MANUFACTURERS OF

CARD · CLOTHING

Of Every Description.

Office and Factory, 1717-29 Bodine St., - PHILADELPHIA, PA.

BUCK CARD CLOTHING HAND CARDS.

WE SOLICIT YOUR ORDERS.
QUALITY GUARANTEED.

BUCK CARD CLOTHING CO., Palmer, Mass.

WAIT'S PAT. CROSS GRAIN QUILL

Far superior in every way to shield or cup; makes a lighter bobbin and costs less. Will not break with decent usage. Leading mills have found them the best and most economical. Sole manufacturers,

HENRY PARKER CO, - - - Springfield, Vt.

JOHN A. MCGUIRE, MANAGER.

All kinds of Bobbins and Spools. Prices right. Prompt delivery.

E. L. TEBBETS & CO.,

LOCKE'S MILLS, ME.

Thread and Silk **SPOOLS** of any description.

We are located in the best white birch region. Our work and prices seem to satisfy the most particular customers. We can give any finish desired. Estimates furnished on samples submitted.

IMPROVED ROVE TRAVERSE

SUITABLE FOR DRAWING, SPINNING AND TWISTING FRAMES.

Keeps point of the cam constantly changing its position thus making the rolls last one third (⅓) longer. Also makes more even yarn and saves about 10% of the pieceing. For trial gear address,

J. H. RAWLINS, 1010 Kerlin Street, Chester, Pa.

PRINT

Instead of Write your

TICKETS!

The Bates Machine Co.
N. Y. Life Bldg.,
346 Broadway, New York.

Special Machines for Numbering Tickets.

Steel and brass stamps for all purposes.

Send for Catalogue.

THE HUMPHREY

Employes' Elevator

For Mills and Factories

"Puts the mill all on one floor." Useful in a dozen ways. Send for particulars.

S. K. HUMPHREY,

53 State Street, . . Boston.

SPINDLES

Also FLYERS, STEEL CAPS, BOLSTERS, STEPS, TUBES, Etc.

For Cotton, Woolen, Worsted, Silk, and Flax Machinery.

MANUFACTURERS AND REPAIRERS

WARD & VANDEGRIFT.

Formerly with Bridesburg Mfg. Co.

Elmer, Salem Co., N. J.

ELLIOT CLOTH FOLDER AND MEASURER

For Cotton and Gingham Mills, Bleacheries, Print Works, Etc.

MANUFACTURED BY

ELLIOT & HALL,

5 41-2 Hermon St., Worcester, Mass. Send for Circular

STEEL AND BRASS

MAILS.

Liberal Discount to Dealers.

J. WALDER, Paterson, N.J.

REEDS, HARNESSES, LINGOES, SHUTTLES AND QUILLS.

MANUFACTURER AND IMPORTER. ALL WORK GUARANTEED.

MACHINE WOOL COMBS,

Hackles, Gills, Fallers and Porcupines. Tentering Tin Plates. Dealer in the best English and American Cast Steel Pins and Comber Needles.

Cotton Combs Neatly Re-Needled.

THOMAS TOWNSEND, 157 Orange St, Providence, R. I.

CARDER'S TOOLS.

LEWIS' PATENT CARD CLAMPS.

Gardner & Reid's Card Tooth Raiser.

For Setting Up Bent Teeth of Card Clothing, with a variety of other tools used by Carders and Manufacturers. Send for circular.

W. H. BROWN,

No. 81 Mechanic St., WORCESTER, MASS

IF YOU USE CUTS

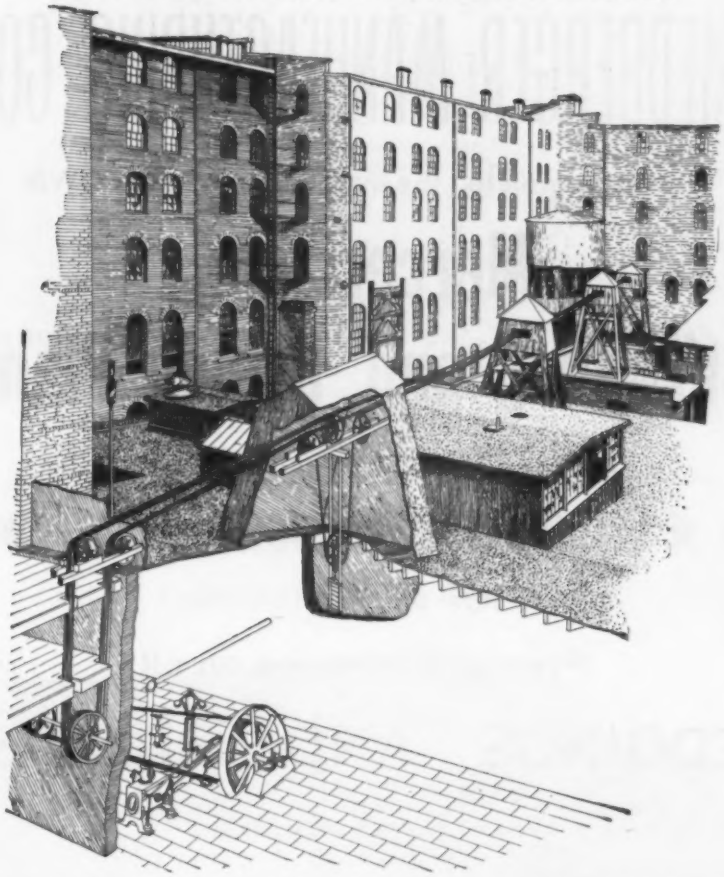
HAVE THEM ELECTROTYPED BY

MANILA ROPE POWER TRANSMISSIONS

Employing "Link-Belt" Patent Machine-Moulded Sheaves,

DESIGNED AND ERECTED.

SHAFTING, PULLEYS, GEARING, FRICTION CLUTCHES, SHAFT BEARINGS, ETC.



MODERN METHODS Catalog. No. 25 listing and describing above articles, also LINK-BELT ELEVATORS and CONVEYORS for handling any class of Raw and Manufactured Product, Link-Belting, Special Carrier Chains, Sprocket Wheels and general mill supplies, mailed upon request.

THE LINK-BELT MACHINERY CO.,

ENGINEERS. FOUNDERS. MACHINISTS.

CHICAGO, U. S. A.

SOUTHERN CONNECTION: WOODWARD, WIGHT & Co., 410 Canal St., New Orleans, La., W. G. Wilmot, Manager.

LINK-BELT ENGINEERING Co., Philadelphia and New York.

THE

FRIEDBERGER MANUFACTURING CO.

Having completed the installation of their OWN

Mercerizing, Bleaching and Dyeing Plant

and grouped under one Roof at this address

the various Edging plants purchased by them last year,

are now enabled to make

Prompt Deliveries on all

EDGINGS AND BRAIDS.

Weekly output increased to 7,000,000 yards....

MILLS AT

GERMANTOWN, PHILADELPHIA

Correspondence Solicited.

Fabric Measuring and Packaging Co.

Postal Telegraph Building, Broadway and Murray Street, New York, U.S.A.

Midnight Fast Black

„Amisilk"

Pickaninny Fast Black

OUR MACHINES PRINT TRADE MARKS

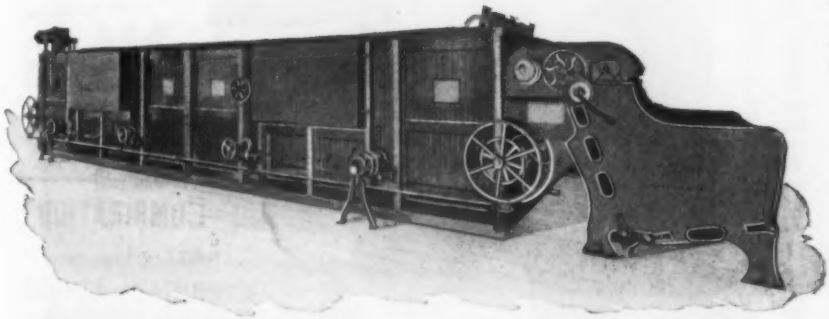
ON COTTONS, WOOLENS, CARPETS (Single and Double Widths.)

We lease and license our machines to measure and imprint the measurement upon fabrics, fold the same lengthwise and roll into merchantable packages all in one operation.

PAID UP LEASES ISSUED.

C. G. SARGENT'S SONS,

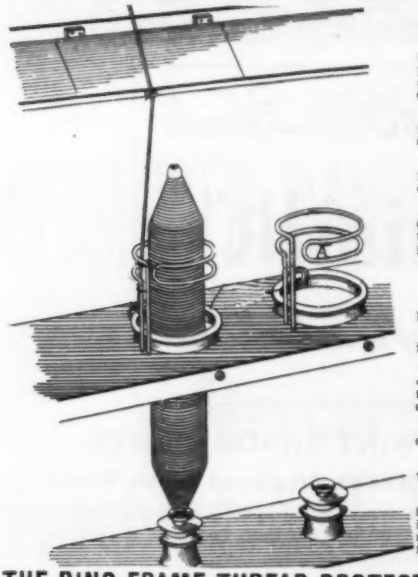
GRANITEVILLE, MASS.



Builders of

Stock Dryers, Wool Washers,
Wool Dusters, Carbonizing Plants,
Burr Pickers, Etc.

New Thread Protector for Ring Spinning



The following advantages are claimed for this protector.

1. The speed of the frame will be increased, and also the production; on frames without any protectors or plate separators about twenty five to thirty per centum, and on frames with separators about twelve or fifteen per centum.

2. The threshing and consequent imperfection and inferiority of yarn and cloth, occasioned by the use of blade separators is entirely obviated.

3. The traverse of the rail can be increased from one-fourth of an inch to one inch, if frame permits, thereby enabling the use of longer bobbins

4. The life of the traveller is prolonged fully fifty per cent on account of a more even tension being imparted to the traveller, the same being held in a perpendicular position at all points of the traverse,

5. Frame and rail more perfectly balanced.

6. Heavier travelers can be used.

7. The yarn is wound tighter and more uniformly on bobbins.

8. A material saving in time of doffing, as more yarn is wound on, and longer bobbins can be used.

9. Saving of time of the operator on account of fewer ends breaking, thereby increasing the quality of yarn, and the operator can attend many more spindles in consequence.

10. The life of the ring will be prolonged on account of decreased friction.

11. No accumulation of lint, dust and dirt, which invariably results in the use of blade separators.

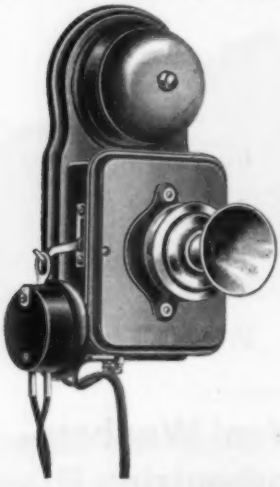
The above results have been obtained in the mills of S. Sanford & Sons, Carpet Manufacturers, Amsterdam, N.Y., in whose mills the protectors have been in use on all spinning frames since October, 1892, and by permission we refer to said firm for a confirmation of our claims.

THE RING FRAME THREAD PROTECTOR CO.. - Amsterdam, N. Y.

Telephones

FOR

HOUSE or FACTORY.



F. O. PLUMMER,

620 Atlantic Ave. Boston, Mass.

TELEPHONES

MAGNETO BELLS, ELECTRICAL SUPPLIES.

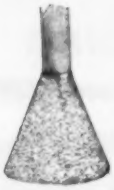
Send for Catalogue

Mianus Elec. Co.

MIANUS, CONN.

NOT IN ANY COMBINATION!

WRITE THE



COHOES UNION BOBBIN WORKS

FOR PRICES ON

BOBBINS, JACK SPOOLS, PATENT SPOOLS, and WINDERS of every description.

C. H. CRANDALL,

363 Saratoga St., COHOES, N.Y

Cleans Scoured Wools, Cotton, Flax, Hair and other Fibres without Injury to Staple.

BRANDY FIBRE CLEANER.

It puts all kinds of woolen waste in perfect condition for cards. If you are interested correspond with

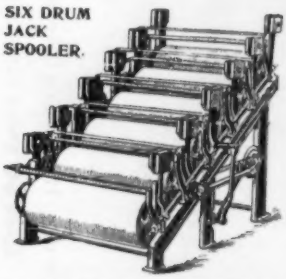
LELAND BELTING CO., Lawrence, Mass.

The Hudson Fibre Co., Hudson. N. Y.,
Offers for Sale Sixteen Lots of
Finished Garnetted Wool and Wool Mixed Stock.

The mixes range in price from 8 cts. to 16 cts. per pound. Wool Percentage from 70 to 95 per cent., suitable for knitting and weaving yarns and felts goods. Samples will be forwarded on request.

Unusually good value.

SIX DRUM JACK SPOOLER.



Winds a perfect spool like a warp beam; one-half more yarn from chain than other makes and six spools to one from a bank of spools in same time.

ALLEN IRON WORKS,

ADAMS, MASS.

Jack and Skein Spoolers, Quillers, Beamers, Yarn Splitters and Dye Machines.

ALLEN BOILER GRATE.

Have had some in constant use 15 years without replenishing.

OSWALD LEVER,

Formerly LEVER & CRUNDY

BUILDERS OF

TEXTILE MACHINERY.

FILLING COP WINDING MACHINES

Spindles driven by belts or by gears, To wind cops. Cops to weave from the inside, or butts to weave from the outside. Can be made to wind any kind of filling from the coarsest to fine numbers. These machines will put the most yarn in a given size of shuttle than any other machine in use.

BANDLESS SPINDLE SPOOLING MACHINES

Adapted to the finer grades of yarn and to the finest silk.

PRESSER DRUM SPOOLING MACHINES

Arranged to spool in any way the trade requires.

BANDLESS VARIABLE SPEED MACHINES

To wind the large bobbins used in knitting mills.

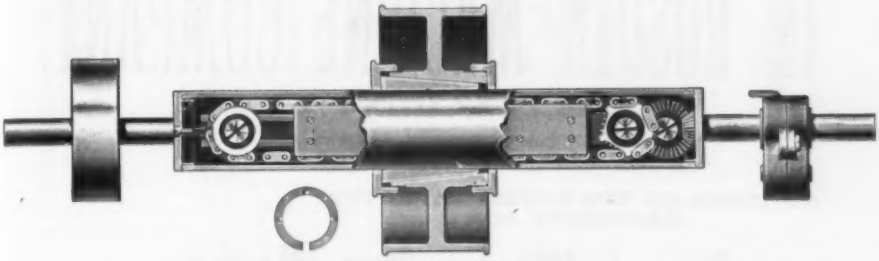
CONICAL and STRAIGHT TUBE WINDING MACHINES.

DRESSER SPOOLING MACHINES.

Beaming Machines, Sectional Warp Mills, Chenille Cutting Machines, Reeling Machines to prevent waste at the bottom of mule bobbins.

Lehigh Ave. & Mascher St., PHILADELPHIA, Pa.

OVER 15,500 SOLD.



(Patent Applied For.)

Quick Work; Simplicity; Rigidness; Perfect Balance; Smooth Traverse; Durability; Interchangeability; Reasonable Price; and Prompt Delivery. Write for Catalogue.

THE ROY TRAVERSE GRINDER with our Differential Motion and new Adjustable Grinding Wheel. Made for Emery Filleting when desired.

B. S. ROY & SON, Worchester, Mass

JACK AND DRESSER SPOOLS--SPECIALTY

With **PATENT CATCH NUT** on iron tenons. Heads **CAN NOT LOOSEN** or **COME OF.** Obtain quotations. You will never regret it.

Chas. O. Murray, Nashua, N. H.

—MANUFACTURER OF—

SPOOLS, BOBBINS, and SHUTTLES,

with or without BRASS or METAL SHIELDS of every description.

Connected with NO TRUSTS or COMBINATIONS.

IMPROVED CARDING.

To Woolen, Worsted and Hosiery Manufacturers:

S. BROWN, The Famous Carder,

is now prepared to come to any mill in Canada, United States or Mexico and change one set of cards, or more, to his new method of carding, on receipt of $25 and railroad fare. This method of carding makes smoother, clearer and stronger yarn than any other way in the world, and makes less waste. If not a perfect success, will charge nothing. If preferred, will send full instructions to any address for $25. Special rates to small mills.

Address, S. BROWN, Carder, Hespeler, Ontario, Canada.

TRADE MARK.

EASTERN GRANITE ROOFING CO.,

Sole Manufacturers of

PERFECTED GRANITE ROOFING.

Asphalt Composition

JSEREY CITY, - - N. J.

ALEXANDER BROS.

BEST OAK BELTING.

PHILADELPHIA.

THE RUSDEN MACHINE COMPANY,

WARREN. R. I.

(Near Providence.)

BUILDERS OF THE LATEST IMPROVED MACHINERY FOR

Bleach Works, Dye Works, Print Works and Finishing Works.

SOLE MAKERS OF....

RUSDEN'S PATENT LATEST IMPROVED

Continuous Steaming Machines.
Aniline Ageing Machines for Dyers and Printers.
New High Speed Automatic Tenters.
New Patent Automatic Clips.

..BLEACHING MACHINERY..

Washers and Squeezers, Patented.
Kiers, all Kinds and Sizes.

..DYEING MACHINERY..

Jiggs, Dye Boxes.
Padders, Indigo Machinery.
Complete Outfits.

..FINISHING MACHINERY..

Water Mangles, Starch Mangles, Dampers, Calenders, Canroys, Belt Stretchers, Cloth Spreading and Guiding Rolls.

BRUSHING MACHINES, for Back Grays and Whites.

Single and Diagonal Double Engines, Rubber, Brass, Iron and Copper Rolls. Expansion Pulleys, Friction Clutches, Shafting and Pulleys, Etc.

TEXTILE WORLD

—AND—

INDUSTRIAL RECORD.

GUILD & LORD,

PUBLISHERS.

Entered at the Boston Post Office as Second-Class Matter.

PUBLICATION OFFICE:

620 Atlantic Ave., Boston.

BRANCH OFFICES:

THE BOURSE, PHILADELPHIA.
140 NASSAU ST., NEW YORK.

SUBSCRIPTION RATES

IN EFFECT AFTER JANUARY 1, 1900.

$3.00 per year including The Annual Directory, in the United States, Canada and Mexico.

$4.00 per year, including the Annual Directory in other foreign countries of the Postal Union, postage paid.

DYERS' SUPPLEMENT, $1.00 extra.

THE TEXTILE WORLD'S ANNUAL DIRECTORY

OF THE

TEXTILE MANUFACTURERS OF THE UNITED STATES

Contains a Complete Directory of all the Textile Establishments with full information about each mill; also Manufacturers' Selling Agents and Buyers of Textile Fabrics from First Hands; Dealers in Raw Material and Stock, Rags, etc., Builders of Textile Machinery and Dealers in Mill Supplies, Chemicals, etc.

It contains 22 Textile Maps, showing the location of cities and towns where there are Textile Establishments, gives distances, railroad connections, etc.

A Book of 448 pages in Flexible Linen Covers. Price, $2.00

To TEXTILE WORLD Paid-in-Advance Subscribers (at $3.00) the Directory is given FREE.

CONTENTS.

	PAGE
Portrait and Biographical Sketch of	
Silas Mandeville Wheelock	591
Trend of Fashion	593
Selling Direct	598
Rainy Day Skirtings	600
Cotton Worsteds	602
Wool Market	603
Exports and Imports of Wool and Manufactured Woolens	604
Cotton Market	605
Exports and Imports of Raw and Manufactured Cotton	606
Measuring, Folding and Winding Cloth	606
Delahunty Dyeing Machine	610
Brandy Fibre Cleaner	609
Hurricane Dryer	612
Woolen Department	
Scouring Woolen Goods—Designing Fancy Cassimeres and Worsteds—Clay Fabric Construction—Metallic Waste Card—D. R. Kenyon & Son's Woolen Machinery—Card Clothing for French Worsted Cards—Oiling Stock for Carding and Spinning—Hopkins 1900 Universal Fulling Mill.	613
Cotton Department	
American Cotton Spinning Machinery—Prevention of Double Yarn on Ring Frames—Uneven Cloth—Japanese to Study Our Methods—Notes on Slashing	629
Knitting Department	
The Knit Goods Situation—Cheap Fleece Lined Underwear—Bleaching Knit Goods—The New Johnson Vertical Dryer for Knit Goods—Seaming and Trimming Machines	635
Silk Department	
Some Mistakes in the Silk Trade—The Silk Industr in California—Instruction in Silk Manufacturing at Lyons—Design for Silk Fabric	641
Power Department	
The World's Coal Supply—An Ounce of Prevention—Heating Surface of Boilers—Prevention of Boiler Scale	645
Dyeing Department	
Recipes—Paranitroaniline Red on Cotton—Fulling and Dyeing in One Operation—Bleaching with Peroxide of Sodium—Dyeing Khaki—Test for Weight of Dye, Cotton and Wool in Textiles	649
Questions and Answers	657
New Publications	659
Industrial News	660
Textile Patents	587-666
Mill News	667
Personals	676
Buyers' Index	681

Kuttroff, Pickhardt & Co.

Sole Importers of the products manufactured by

BADISCHE ANILIN- & SODA-FABRIK,
Ludwigshafen o/Rh., Germany,

New York, - - 128 Duane St.
Boston, - - - 153 Milk St.
Providence, - - 80 So. Water St.
Philadelphia, - 207 Chestnut St.
Chicago, - - - 207 Michigan St.

Dyestuffs, Chemicals and Colors

PATENTS **CROSBY & GREGORY**
34 SCHOOL STREET.
Telephone 3593, Boston. **Office Established 1854.** Cable address Aniline.

George W. Gregory, in November, 1874, resigned his position as Principal Examiner U Patent Office to enter the firm.

Patents secured in the United States and all other countries, Reissues obtained. Interferences conducted. Suits brought and defended for infringement, and searches made as to the validity of patents. Prepared to give special and expert attention to cases involving knowledge of cotton, wool, leather and metal working machinery, including boots and shoes and electrical, chemical and metallurgical inventions and steam engineering Correspondence solicited. No charge for preliminary advice. Personal consultation best when possible.

HOPEDALE, Mass., January 3d, 1900.

Mr. George W. Gregory, of Crosby and Gregory, has taken out for us since January 1875, more than two hundred patents.
GEO. DRAPER & SONS.

PATENTS, CAVEATS, TRADE-MARKS, COPYRIGHTS AND DESIGNS.

Send your business direct to Washington.
Saves time. Costs less. Better service.

30 years experience. Endorsements from Actual Clients furnished. Consult references in Washinton-Bradstreet's Agency and the Columbia National Bank.

E. G. SIGGERS, National Union Building,
918 F. Street, N. W., Washington, D. C.

List of Textile Patents.

Issued August 28, and September 4, 11, 18 and 25, 1900.

Baling Press. 658,304. W. D. Watkins and T. P. Pruit, Brownwood, Texas.

Braiding Machine. 657,763. O. Dickhaus, New York, N. Y.

Carding Machine Stop Motion. 658,137. J. Brady, Jr. and N. Chouinard, Fall River, Mass.

Carding Machinery, Wool. 658,183. J. Leach and F. Hepworth, Huddersfield, Eng.

Carding Engine Under Screen. 656,871. J. F. White, Providence, R. I., assignor by direct and mesne assignments to Walter Rushton, same place, and Albert E. Carroll, Boston, Mass.

Cloth Cutter. 658,474. C. F. Sparks, Alton, Ill.

Cloth of Changeable Color, Merchantable Printed. 658,746. Chas. H. Hope, Providence, R. I.

Cotton Gin, Roller. 657,734. J. W. Graves, Covington, Tenn.

Cotton Picking and Cleaning Machine. 657,580. J. T. Woolery, Fort Worth, Tex.

Cotton Press. 658,060. M. Swenson, Chicago, Ill., assignor by mesne assignments to the American Cotton Co., New York, N. Y.

Dyeing Apparatus. 657,322. J. C. Thickins, Pittsfield, Mass.

Dyeing Machine. 657,293. J. T. Morgan and Wm. Menzies, Wilkes-Barre, Pa.

Fabrics, Means for Raising Pile or Nap on. 658,539. W. H. Baker, Central Falls, R. I., and Fredk. E. Kip, Montclair, N. J.

Fabric Renovator, Steam. 658,328. J. B. Allen and Cortez D. Hall, Providence, R. I.

Knit Goods, Removing Fibre from and Finishing. 658,320. J. May, Nashville, Tenn.

Knitting Machine Attachment, Automatic Circular. 658,415. A. G. Wright, Philadelphia, Pa., assignor to the National Automatic Knitter Co., same place.

Knitting Machine, Circular. 657,182. B. T. Steber, Utica, N. Y.

Knitting Machine Knot-Actuated Stop. 657,410. Walter Green, Williston, S. C.

Knitting Machine Stop Motion, Circular. 658,251. W. J. Ferris, Woonsocket, R. I.

Loom. 657,914. I. W. Chandler, Burlington, Vt.

Loom. 658,241. J. Corzilius, Paterson, N. J., assignor to the Bagdad Rug Co., of New Jersey.

Loom. 657,115. G. F. Hutchins, Worcester, Mass., assignor to the Crompton & Knowles Loom Works, same place.

Loom. 657,604. G. F. Kuett, Paterson, N. J., assignor to the American Automatic Loom Co., New York, N. Y.

Loom Attachment. 657,283. J. W. Dawson, Scranton, Pa.

Loom Electric-Circuit Closer. 657,795. H. W. Smith and W. H. Redding, Worcester, Mass.

Loom Filling Changing Mechanism. 658,324. E. S. Stimpson, Hopedale, Mass., assignor to Draper Co., same place and Portland, Me.

Loom Picker Stop Mechanism. 658,101. D. Young, Paterson, N. J.

Loom Picking Motion. 657,726. J. Blanchet, Providence, R. I., assignor of one-half to Louis Guedesse, Woonsocket, R. I.

Loom Shuttle. 657,098. N. Durant, Range, Wis., assignor of one-half to Geo. Gamache and Hugh Phillips, Amery, Wis.

Loom Stop Motion. 657,691. J. C. Cottam, Bradford, and Jos. Bentley, Shipley, Eng.

Loom Warp Stop Motion. 657,094. R. Crompton, Worcester, Mass., assignor to the Crompton & Knowles Loom Works, same place.

Loom Warp Thread and Selvage Guide. 658,341. N. Cartier, Biddeford, Me., assignor to Jacob Cartier and Arthur G. Pelletier, same place.

Looms for Weaving Double Pile Fabrics, Indicating Device for. 658,242. J. Corzilius, Paterson, N. J.

Measuring and Marking Machine, Cloth. 656,846. F. Lehmann and A. van Kempen, Berlin, Germany.

(Continued on page 666)

M. A. FURBUSH & SON MACHINE CO.

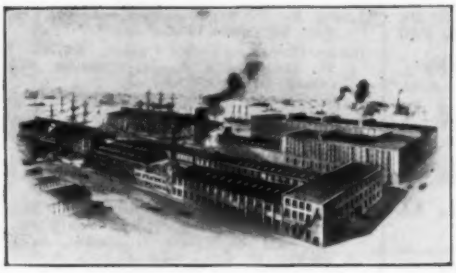
OUR LINE INCLUDES MODERN TYPES OF

Wool Pickers
Cards for all kinds of Wool
Cards for Worsted
Cards for Shoddy
Cards for Cotton Batts
Breakers
Condensers
Blamire Lap Machines
Balling Heads for Worsted Cards
Knickerbocker Attachments for Cards
Reballing Machines for Worsted
Vibrators for Ring Doffers
Fillet Winders
Grinders
Card Stretchers
Rubbing Motions
Spooler and Creels for Side Drawing Bobbins
Self-Acting Mules
Hand Jacks
Jack Bobbin Winders
Beamers,
Doffer Combs
Creels
Twisters
Heck Stands
Universal Sectional Warp Mills
Warp Dressers
Dresser Spoolers
Looms for Carpets, Smyra Rugs, Rug Weft
Blankets, Table Covers,
Paper Makers' Felt, Narrow Woolens,
Teasel Gigs
Card Clothing
Looping Attachment to Twisters,
Hurkland High-Speed Ingrain Carpet Loom
Heddle frames

CARDING, SPINNING AND WEAVING MACHINERY.

TWELFTH AND MARKET STS., CAMDEN, N. J.

Philadelphia Office, 428-430 Bourse.



THE AMERICAN MANUFACTURING COMPANY

65 WALL ST., NEW YORK.

ROPE AND TWINES

SPECIALTIES:

"AMERICAN" TRANSMISSION ROPE.
SISAL, MANILA AND JUTE BALE ROPE.
FINISHED INDIA HEMP TWINES.

Send for . . .

"A LITTLE BLUE-BOOK ON ROPE TRANSMISSION."
SECOND EDITION—AUGMENTED.

SILAS MANDEVILLE WHEELOCK.

TEXTILE WORLD.

Vol. XIX. OCTOBER, 1900. No. 4.

SILAS MANDEVILLE WHEELOCK.

Silas Mandeville Wheelock was born in Uxbridge, Mass., Nov. 11th, 1817, and there he has since lived, never having resided outside of the school district in which he was born. He is a descendant of Ralph Wheelock, a dissenting preacher who emigrated from England to America in 1637, to escape the fierce religious persecution of that time. Ralph settled in Watertown, and afterwards founded Medford, and received the first grant of a house lot in that town.

Simeon Wheelock, the fifth descendant from Ralph, settled in Uxbridge in 1762. His son, Jerry Wheelock, was a mechanic and manufacturer of woolen machinery, and engaged in woolen manufacturing in Uxbridge in 1811. Jerry's son, Silas, the subject of this sketch, began work in the mill in May, 1827, when but nine years of age, and he has now in his possession the original account of this work, which reads as follows: August 14, 1827—By 12 weeks, 2¾ days' work Silas at 5/—$10.38. This is less than 14 cents per day and board. His work was piecing rolls for the "billy." It was long before the introduction of card condensers, and the "billy" converted the rolls into roping, which was afterwards spun on the spinning jenny. The piecers stood behind the billy, and kept the machine supplied with rolls. Mr. Wheelock still retains a lively recollection of the discipline then maintained by means of a black leather strap which was hung in a convenient place, and was vigorously applied to the young piecer when he allowed the ends to run out. This was in the same mill that he now owns, and near which he lives.

Since that time he has been continuously connected with woolen manufacturing, either as workman, overseer, superintendent, proprietor or manager of corporations. From 1840 to 1846, he was engaged in manufacturing woolens with his father and brother, Charles A. In the last named year, his father retired, and the firm of C. A. & S. M. Wheelock was formed. They operated the mill in which Silas began work, manufacturing plaids, satinets, linseys and tweeds, until 1855, when the mill was enlarged, and the manufacture of fancy cassimeres was carried on until 1890.

During this period of 44 years, Silas M. Wheelock was the general business manager and financier of the firm. His brother Charles, who had charge of the mill and manufacturing department, was an excellent manufacturer, of unusual mechanical ability, a deep student, and a man of sterling worth. The brothers thus made a strong combination, and during a period of nearly half a century worked together with harmony and success.

Mr. Wheelock, from 1861 to 1867, without any interruption in his operations as a manufacturer, successfully managed woolen departments with the commission houses of Tucker, Newton & Co., and others, in Boston and New York. His services in this field were sought because of his marked business capacity and high reputation.

In 1870, Mr. Wheelock purchased the Harris Woolen Company's 12-set mill at Putnam, Conn., and organized the Putnam Woolen Company. He, as treasurer and business manager, operated this mill with great success, and in 1880, added by purchase another mill, making 19 sets of cards, in all. During his administration, extra dividends, equal to the original stock

paid in, were returned to the stockholders in addition to the regular six per cent. dividends. This record is all the more remarkable because of the fact that this period included the financial panic of 1873, which was followed by long years of general business depression. The Putnam cassimeres became very popular, being standard goods in their class.

In 1883, Mr. Wheelock organized the Calumet Woolen Company, and as treasurer purchased the 8-set Central Mill, at Uxbridge. This mill, named the Calumet, was started on all wool cassimeres, and three years later the same corporation purchased and remodeled the 12-set Uxbridge Woolen Mill, renaming it the Hecla, and has since operated these two mills on strictly all wool cassimeres, cheviots and worsteds. Mr. Wheelock had retained the management of the Waucantuck and Putnam mills, and the addition of the Calumet and Hecla mills placed him in active control of 44 sets of woolen machinery.

In 1887, owing to the increasing business responsibilities, Mr. Wheelock resigned the treasurership of the Putnam Company, and was succeeded by his son, Eugene, and during recent years much of the management of the Calumet Company has been turned over to his other son, Arthur, who has been agent of the company since its organization.

Mr. Wheelock is today, at the age of 83 years, as active and vigorous as ever, and is still in close touch with the extensive industries which he has formed. He has never sought political honors, but has always taken a deep interest in public affairs. He served for several years on the Uxbridge Board of Selectmen, and in 1888 was elected to represent the Second Worcester District in the Massachusetts Senate. Although a Republican candidate, the large majority by which he was chosen, showed his popularity with all parties, and he was re-elected for a second term. He was a delegate to the recent Republican Convention at Philadelphia, at which President McKinley was re-nominated.

But it is as a successful business man and woolen manufacturer that Mr. Wheelock is best known. He has for 66 years been engaged in buying wool, and in manufacturing and selling woolen goods. His whole life has been passed in useful productive work. He has never made money by wrecking business properties; instead, he has taken properties which had been failures in other hands, and by superior management made them successful.

Beginning his mill life in the infancy of the industry, he has seen the art develop mechanically from the crude methods of 1827 to its present state. Every obligation which he has incurred during his long career has been paid when due with one hundred cents on the dollar, and the mills which he has managed have returned large profits to their owners.

His management of business interests has been conservative, and yet he has shown the fullest courage in entering on new enterprises or meeting emergencies. Mr. Wheelock is so constituted that difficulties and dangers that discourage the many, stimulate him to renewed effort. His hopefulness and calm courage strengthen all who come in contact with him.

As an employer, he has always possessed the good will and respect of his employees, and has shown in marked degree the ability to preserve close, friendly relations with them, while maintaining a high degree of discipline. He is a man of genial, kindly nature, and his private life like his business career, has been without reproach.

And now, at the age of 83 years, he may well feel that the days of political temptation have gone by, and, with the past secure, it is safe to pronounce upon him, after a long life of industry, integrity and honor, the benediction of Well done, good and faithful servant. The esteem and love of the community in which you have lived are your reward.

Opinions of Manufacturing Clothiers on the Trend of Fashion for the next Heavy Weight Season on Overcoatings and Men's Suitings.

No sooner are the light weight samples shown and orders booked than the manufacturer starts on sample work for another season. He finds himself to a large extent in the dark as to what will be popular with the trade, and relying largely on the orders of his selling agent or upon his own notions finds frequently when his goods are shown, and when it is too late to make new samples of popular styles and fabrics, that his goods do not sell.

Realizing that this condition now confronts the men's wear manufacturer in making heavy weight samples for the coming 1901 season, the Textile World has endeavored to secure an expression of opinion from representative houses in the clothing trade throughout the country, as to the fabrics, colorings and styles in overcoatings and men's wear suitings, likely to be popular next season.

The following questions were asked, viz.—

OVERCOATINGS.

A. Is the general trend toward rough or smooth goods?

B. Solids or mixtures?

C. What fabrics will be most in demand:—Kerseys? Meltons? Beavers? Chinchillas? Cheviots? Friezes?

D. What are the desirable colorings?

E. Will plaid backs be called for?

F. About what priced goods will be most in demand?

MEN'S WEAR SUITINGS.

A. Is the general trend toward hard or rough finish?

B. Plain or fancy goods?

C. If fancy goods, checks, plaids or stripes?

D. Fabrics:—Clay, solid color? Clay, mixtures? Thibets, solid? Thibets, mixtures? Serges, solid? Serges, fancy? All worsted fancy? Worsted cheviots? All wool cassimeres? Wool cheviots? Cotton worsteds, cheap grade? Cotton worsteds, better grade?

E. What colorings will be most popular?

F. If cotton worsteds are going by, what will take their place?

G. About what priced goods in men's suitings will be most in demand?

Is the stock of piece goods in clothiers' hands large, or small, or average?

Is the stock of clothing in hands of wholesale and retail dealers large, small, or average?

Do you think the consumer is inclined to ask for a better grade of goods than during the past few years?

The large proportion of replies received indicated the general appreciation and approval on the part of the clothing trade, of our effort to aid the manufacturer in getting up new fabrics and styles.

Several of the replies from leading houses were accompanied by a request not to publish their names, a request which we have complied with, although their report appears with the others in the following tables.

A study of the individual expressions of opinion will be of more value to the manufacturer than would any summary of the different opinions expressed, on account of the widely separated sections of the country and different classes of trade represented.

In colorings for overcoatings the opinion seems to run toward black and blue and gray mixtures, while a considerable number mention olive and brown shades, enough to warrant these colors being included in a line of

samples. Plaid backs have few friends.

In men's wear suitings, the weight of opinion leans toward fancy goods, although the plain goods are favored by many, and this would indicate that they will find a considerable sale.

A gratifying feature is the great preponderance of opinion that the consumer is inclined to use a better grade of goods than during recent years. The opinion as to size of stock in clothiers hands is very evenly divided between large, small and average, while only seven state as their belief that the jobbers and retailers stocks are small. The others say either large or average which coincides with the theory that the collapse of the 1899 boom left the retailer and jobber in possession of a large quantity of merchandise purchased when the business activity was at its height.

OVERCOATINGS.

The letters in () refer to the questions asked. See page 593.

B. B. Goldberg, New York. (A)--Rough; (B)—Solids and Oxfords; (C)—Friezes, Kerseys; (D)—Grays, Black, Blue; (E)—No; (F)—Medium.

A. B., (A)—Smooth; (B)—Solids; (C)—Kerseys, Beavers, Meltons.

Schlop Bros. & Co., Baltimore, Md., (B)—Solids and Mixtures; (D)—Blues, Browns, Olives, Grays; (E)—No; (F)—$1.25 to $2.50.

Minnesota Tailoring Co., St. Paul, Minn., (A)—Rough; (B)—Mixtures; (C)—Friezes, Meltons, Kerseys; (D)—Black, Gray, Green; (E)—No; (F)—$2.00 to $3.00.

M. Kory & Son, St. Louis, Mo., (A)—Smooth; (C)—Kerseys, Beavers, Friezes; (D)—Piece Dyes; (E)—No.

B. F. Miller & Co., New York, N. Y., (A)—Rough; (B)—Mixtures; (C)—Cheviots, Friezes, Meltons, Kerseys; (D)—Browns. Oxfords; (E)—No; (F)—$1.00 to $2.37½.

Heidelbach, Friedlander & Co., Cincinnati, O., (A)—Rough; (B)—Mixtures; (C)—Cheviots, Kerseys; (D)—Oxfords, Grays; (E)—Yes.

H. Cohn & Son, Chicago, Ill., (A)—Smooth; (B)—Solid; (C)—Kerseys, Beavers, Friezes; (D)—Black, Blues, Brown; (E)—No; (F)—$1.25 to $2.00.

G. J. Peacock Clothing Co., Columbus, Ga., (B)—Solid; (C)—Kerseys; (F)—Medium.

International Tailoring Co., New York, (A)—Rough; (B)—Mixtures; (C)—Friezes, Cheviots, Kerseys; (D)—Oxfords; (E)—Yes; (F)—$1.75 to $2.50.

Fechheimer Bros. Co., Cincinnati, O., (A)—Rough; (B)—Solids; (C)—Kerseys, Beavers; (D)—Oxfords, Steels; (E)—Yes; (F)—Medium.

A. Schweitze & Co., Chicago, Ill., (A)—Smooth; (B)—Solids; (C)—Kerseys, Beavers, Friezes; (D)—Blacks, Blues; (E)—Yes; (F)—Medium.

Heavenrich Bros., Detroit, Mich., (A)—Both; (B)—Both; (C)—Kerseys, Meltons, Friezes, Chinchillas; (D)—Blacks, Blues, Olives; (E)—Yes; (F)—$1.00 to $1.25.

L. C. Wachsmuth & Co., Chicago, Ill., (A)—Rough; (B)—Mixtures; (C)—Cheviots, Kerseys; (D)—Grays, Oxfords, Blues; (E)—No; (F)—Medium.

Rosenthal & Desberger, St. Louis, Mo., (A)—Smooth; (B)—Solid; (C)—Kerseys; (D)—Blue, Black; (E)—Yes; (F)—$1.00 to $1.50.

Max Brickner & Son, Co., Rochester, N. Y., (A)—Rough; (B)—Mixtures; (C)—Friezes, Cheviots, Kerseys; (D)—Grays, Oxfords, Olive; (E)—No; (F)—$1.25 to $2.50.

Hickey, Freeman & Mahone Co., Rochester, N. Y., (A)—Rough; (B)—Mixtures; (C)—Chinchillas, Friezes, Kerseys; (D)—Oxford; (F)—$1.25 to $2.50.

J. Witkowsky, Chicago, Ill., (A)—Smooth; (B)—Solid; (C)—Kerseys, Friezes, Chinchillas, (D)—Blue, Black, Brown, Olive; (E)—Yes; (F)—$1.25 to $2.00.

W. & T. Allen & Co., Philadelphia, (A)—Smooth; (B)—Mixtures; (C)—Kerseys, Meltons; (D)—Dark Colors; (F)—$1.25.

Edw. Rose & Co., Chicago, Ill., (A)—Both; (B)—Mixtures; (C)—Kerseys, Chinchillas, Friezes; (D)—Blue, Black, Green, Gray; (F)—$1.20 to $2.75.

J. F. Rholech, Chicago, Ill., (A)—Rough; (B)—Solid; (C)—Kerseys; (D)—Light Blue and Brown; (E)—No; (F)—$1.10 to $1.75.

Friend & Marks, Milwaukee, Wis., (A)—Both; (B)—Both; (C)—Kerseys, Chinchillas, Friezes, Meltons, Beavers; (D)—Blue, Black, Brown, Gray; (E)—No; (F)—$ .75 to $1.50.

Martin Blumenfeld & Bros., St. Louis, (A)—Smooth; (B)—Solid; (C)—Kerseys, Chinchillas, Friezes, Meltons, Beavers; (E)—No; (F)—$1.00 to $1.37½.

Stern, Schafer & Decker, Chicago, (A)—Rough; (B)—Solid; (C)—Cheviots, Friezes; (D)—Black Oxford; (E)—Yes; (F)—$1.00.

Work Bros. & Co., Chicago, (A)—Both; (B)—Both; (C)—Kerseys, Cheviots, Friezes; (D)—Black, Blue, Brown, Gray; (E)—Yes; (F)—$1.10 to $2.75.

Kahn Tailoring Co., Indianapolis, (A)—Rough; (B)—Mixtures; (C)—Cheviots; (D)—Gray; (E)—No.

Bloom, Cohn & Co., Cincinnati, (A)—Smooth; (B)—Solid; (C)—Kerseys, Beavers, Meltons, Friezes, Chinchillas; (D)—Black, Blue; (E)—No; (F)—$ .80 to $1.25.

G. Sturm & Sons, Cincinnati, (A)—Rough; (B)—Both; (C)—Kerseys, Meltons, Beavers, Chinchillas, Friezes; (D)—Oxfords, Black; (E)—Yes; (F)—Cheap and Medium.

David N. Pfaelzer & Co., Chicago, (A)—Smooth; (B)—Mixtures; (C)—Meltons, Cheviots, Friezes; (D)—Oxford; (E)—No; (F)—$1.00 to $1.25.

Isadore Kaufman's Sons Co., New York, (A)—Smooth; (B)—Solid; (C)—Kerseys, Meltons; (D)—Dark Blue, Oxford; (E)—No; (F)—$1.25 to $1.50.

Feder Silberberg & Co., Cincinnati, (A)—Smooth; (B)—Both; (C)—Kerseys, Beavers, Friezes; (D)—Black, Blue, Olive, Dark Gray, Tan; (E)—Few; (F)—$ .75 to $1.50.

Fechheimer, Keefer & Co., Cincinnati, (A)—Smooth; (B)—Solid; (C)—Kerseys, Beavers, Friezes; (D)—Black, Blue, Olive, Dark Gray, Tan; (E)—Few; (F)—$ .75 to $1.25.

B. Rothschild & Co., Rochester, N. Y., (A)—Rough; (B)—Mixtures; (C)—Friezes, Meltons; (D)—Dark Slate, Green; (E)—Yes; (F)—$1.00 to $1.25.

Moore & Beirs, Rochester, N. Y., (A)—Rough; (B)—Both; (C)—Cheviots, Friezes; (E)—No.

Glueckmann & Gross, New York, (A)—Rough; (B)—Mixtures; (C)—Friezes, Kerseys; (D)—Oxford, Black, Blue, Olive; (E)—No; (F)—$1.00 to $1.25.

Louis Holtz Sons, Rochester, (A)—Smooth; (B)—Both; (C)—Kerseys, Friezes; (D)—Dark Brown, Black, Olive; (E)—Few; (F)—$1.25 to $2.75.

Smith, Chase & Cutting, Boston, (A)—Rough; (B)—Solid; (C)—Friezes, Kerseys; (D)—Grays; (E)—Few; (F)—$1.10 to $2.00.

Strouse & Bros., Baltimore, (A)—Rough; (B)—Mixtures; (C)—Cheviots, Meltons, Kerseys; (D)—Gray, Green; (E)—No; (F)—Medium.

B. L. Price Mfg. Co., New York, (A)—Smooth; (B)—Solid; (C)—Kerseys, Beavers, Friezes; (D)—Black, Blue, Brown; (E)—No; (F)—$1.00 and less.

L. Michael & Co., New York, (A)—Smooth; (B)—Solid; (C)—Kerseys, Beavers, Friezes; (D)—Brown, Green, Gray; (E)—Few; (F)—$ .50 to $1.00.

Kearney Bros., Syracuse, (A)—Rough; (B)—Mixtures; (C)—Kerseys; (D)—Oxford, Cray; (E)—Few; (F)—$1.25 to $1.50.

J. Segall & Co., New York, (A)—Smooth; (B)—Both; (C)—Kerseys, Meltons, Friezes; (D)—Black, Blue, Olive, Green; (E)—No; (F)—Medium.

Smith, Gray & Co., New York, (A)—Rough; (B)—Mixtures; (C)—Cheviots, Friezes; (D)—Gray, Olive; (E)—No; (F)—$1.25 to $2.50.

C. D., (A)—Smooth; (B)—Solid; (C)—Kerseys, Meltons, Friezes; (D)—Black, Blue, Brown, Olive; (E)—Few; (F)—$1.00 to $1.50.

Myers & Andrews, Boston, (A) Rough; (B) Both; (C)—Cheviots, Friezes, Kerseys; (D)—Oxfords; (E)—No; (F)—Medium.

S. W. Loomis, Boston, (A)—Rough; (B)—Mixtures; (C)—Cheviots, Friezes, Kerseys; (D)—Oxfords, Olive; (E)—No; (F)—$1.50 to $2.50.

Herman Kratzenstein & Co., New York, (A)—Smooth; (B)—Solid; (C)—Kerseys; (D)—Blue, Black, Brown; (E)—No; (F)—$1.00 to $1.37½.

Wm. Vogel & Son, New York, (A)—Rough; (C)—Cheviots, Friezes, Meltons; (D)—Brown, Green.

M. H. Lochheimer & Sons, Baltimore, (A)—Smooth; (B)—Solid; (C)—Kerseys, Beavers, Meltons; (D)—Black, Blue, Tan, Oxford, Olive, Brown; (E)—Few; (F)—$1.00 to $1.50.

S. Brafman & Sons, Baltimore, (A)—Smooth; (B)—Solid; (C)—Kerseys, Beavers, Meltons; (D)—Black, Blue.

Henry Sonneborn & Co., Baltimore, (A)—Both; (C)—Kerseys, Friezes; (E)—No.

Frank Brothers Co., Philadelphia, (A)—Rough; (B)—Solid; (C)—Cheviots, Friezes, Kerseys; (D)—Black, Blue, Oxford; (E)—Yes; (F)—Medium.

Rinehard, Meyer & Co., Baltimore, (A)—Rough; (B)—Mixes; (C)—Cheviots; (D)—Oxford; (E)—No; (F)—$12.00 to $15.00.

Stoutenburgh & Co., Newark, N. J., (A)—Rough; (B)—Mixes; (C)—Cheviots, Friezes, Kerseys; (D)—Oxford, Gray; (E)—No; (F)—$12.00 to $20.00.

Ehrman & Stern, New York, (A)—Smooth; (B)—Solid; (C)—Kerseys, Meltons; (D)—Blue, Black; (E)—No; (F)—$1.00 to $1.50.

Cohen & Levy, New York, (A)—Smooth; (B)—Solid; (C)—Kerseys; (D)—Blue, Black, Brown; (E)—Few; (F)—$1.00 to $1.50.

Spitz Bros. & Mork, Boston, (A)—Smooth; (C)—Kerseys, Friezes; (D)—Oxford and Cambridge Mixtures, Black, Olive; (F)—$10.00 to $20.00.

Whitney, Christenson & Bullock, Chicago, (A)—Smooth; (B)—Solid; (C)—Kerseys, Friezes; (D)—Blue, Black, Brown; (E)—Few; (F)—Medium.

Kuh, Nathan & Fischer Co., Chicago, (A)—Rough; (B)—Mixtures; (C)—Cheviots, Friezes, Kerseys, Meltons; (D)—Black, Blue, Olive, Oxfords; (E)—Few.

Lowenstein, L. & Son, Chicago, (A)—Rough; (B)—Both; (C)—Kerseys, Friezes, Chinchillas, Meltons, Beavers; (D)—Black, Blue, Oxford, Olive; (E)—Few; (F)—$1.25 to $1.50.

E. F., (A)—Smooth, (B)—Both; (C)—Kerseys, Cheviots, Friezes; (D)—Black, Brown, Olive, Oxford; (E)—Few; (F)—$1.25 to $2.00.

MEN'S WEAR SUITINGS.

Minnesota Tailoring Co., St. Paul, (A)—Rough; (B)—Fancy; (C)—Checks; (D)—Clays, Thibets, Serges, Wool and Worsted Cheviots; (E)—Blue, Black, Gray, Green; (F)—Cheviots; (G)—$1.50 to $2.00.

A. B., (A)—Hard; (B)—Plain; (C)—Checks; (D)—Clays (solid and mixtures), Cassimeres, Cotton Worsteds (better grade); (G)—$ .60 to $1.00.

Schlop Bros. & Co., Baltimore, (A)—Rough; (B)—Both; (C)—Plaids, Stripes, Cheviots, Cassimeres, Cotton Worsteds (better grade); (D)—Clay and Thibets (solid color), Serges (fancy), All-Worsted Fancy, Wool and Worsted; (E)—Dark and Medium Shades; (F)—Cassimeres and Cheviots; (G)—$1.00 to $2.50.

M. Kory & Sons, St. Louis, (A)—Hard; (B)—Both, (D)—Clays and Serges (solid), Clay Mixtures, All Worsted Fancy, Cassimeres, Cotton Worsteds (both grades); (E)—Steel Gray; (G)—$1.00.

B. F. Miller & Co., New York, (A)—Rough; (B)—Both; (C)—Stripes; (D)—Clays and Thibets (solid), Serges (fancy), Cassimeres, Cotton Worsteds (cheap grade); (E)—Olive; (G)—$1.00 to $1.57½.

Heidelbach, Friedlander & Co., Cincinnati, (A)—Rough; (B)—Fancy; (D)—Clays, Thibets, Serges (solid), All Worsted Fancy, Cotton Worsteds (cheap grade); (E)—Gray; (G)—$ .80 to $1.00.

H. Cohn & Son, Chicago, (B)—Both; (D)—Clays, Thibets, Serges (solid), Worsted Cheviots, Cassimeres, Cotton Worsteds (better grade); (E)—Dark Colors; (G)—$7.50 to $10.00.

G. J. Peacock Clothing Co., Columbus, Ga., (A)—Rough; (C)—Plaids; (D)—Clays (solid), Cassimeres; (E)—Blue, Oxford, Gray, Mode.

International Tailoring Co., New York, (A)—Hard; (B)—Fancy; (C)—Stripes; (D)—Clays, Serges (solid), Cassimeres, Cotton Worsteds (better grade); (E)—Oxford, Slate; (G)—$1.25 to $1.75.

Fechheimer Bros. Co., Cincinnati, (A)—Rough; (B)—Plain; (C)—Stripes; (D)—Clays, Thibets, Serges (solid), All Worsted Fancy, Cotton Worsteds (cheap grade); (E)—Oxford, Black, Blue; (F)—All Wool Worsteds and Cassimeres; (G)—$7.50 to $15.00.

A. Schwettze & Co., Chicago, (B)—Fancy; (C)—Checks, Plaids; (D)—Clays, Serges (solid), Clay Mixtures; (G)—Medium.

L. C. Wachsmuth, Chicago, (B)—Fancy; (C)—Checks; (D)—Clays, Serges (solid), All Worsted Fancy, Cassimeres; (F)—Cheap Cassimeres; (G)—$ .50 to $1.10.

Rosenthal & Desberger, St. Louis, (B)—Fancy; (C)—Small Checks; (D)—Clays, Thibets, Serges (solid), All Worsted Fancy, Worsted Cheviots, Cassimeres, Cotton Worsteds (both grades); (E)—Blue or Gray Mixed; (G)—$ .65 to $1.25.

Max Brickner & Son Co., Rochester, (A)—Hard; (B)—Fancy; (C)—Checks, Plaids, Stripes; (D)—Clays, Thibets, Serges (solid), Clay Mixtures, Serges (fancy), All Worsted Fancy, Cassimeres, Wool Cheviots, Cotton Worsteds (cheaper grade); (E)—Olive, Gray, Oxford; (G)—$1.00 to $2.00.

Hickey, Freeman & Mahone Co., Rochester, (A)—Rough; (B)—Fancy; (D)—Clays, Thibets (solid), All Worsted Fancy, Worsted Cheviots, Cotton Worsted (cheap grade); (E)—Olive and Gray Mixtures; (G)—$1.00 to $2.25.

E. F., (A)—Hard; (B)—Fancy; (C)—Checks, Stripes; (D)—Clays, Thibets, Serges (solid), All Worsted Fancy, Worsted Cheviots, Cassimeres; (E)—Olive Mixtures in Dark Shades and Brown Mixtures; (F)—Cheviots, Worsteds; (G)—$1.00 to $1.25.

J. Witkowsky, Chicago, (A)—Hard; (B)—Plain; (C)—Stripes; (D)—Clays, Thibets, Serges (solid), All Worsted Fancy, Wool Cheviots, Cotton Worsteds (cheap grade); (E)—Blue Mixtures, Gray, Brown; (F)—Worsteds; (G)—$1.00 to $2.00.

Heavenrich Bros., Detroit, (A)—Both; (B)—Both; (C)—Checks, Stripes; (D)—Clays, Thibets, Serges (solid), Clay Mixtures, All Worsted Fancy, Worsted and Wool Cheviots, All Wool Cassimeres; (E)—Black, Blue, Olive; (G)—$ .75 to $1.75.

Edward Rose & Co., Chicago, (A)—Hard; (B)—Fancy; (C)—Checks, Stripes; (D)—Clays, Thibets, Serges (solid), Worsted and Wool Cheviots, All Wool Cassimeres, Cotton Worsteds (both grades); (E)—Blue, Gray, Green, Olive; (G)—$ .90 to $2.00.

L. Lowenstein & Son, Chicago, (A)—Both; (B)—Plain; (C)—Checks, Plaids; (D)—Clays, Thibets, Serges (solid), All Worsted Fancy, Cassimeres; (E)—Blue, Olive; (F)—Worsteds and Cheviots; (G)—$1.00 to $1.37½.

J. Frolech, Chicago, (A)—Rough; (B)—Plain; (C)—Checks; (D)—Clays, Thibets (solid), All Worsted Fancy, Cotton Worsteds (both grades); (E)—Brown, Blue; (G)—$ .90 to $1.50.

Friend & Marks, Milwaukee, Wis., (A)—Hard; (B)—Both; (C)—Checks, Plaids; (D)—Clays, Thibets, Serges (solid) Clay Mixtures, Cassimeres, Cotton Worsteds (cheap grade); (E)—Gray and Olive Mixtures; (F)—Low Grade Cassimeres; (G)—$ .75 to $1.25.

Martin Blumenfeld & Bros., St. Louis, (A)—Hard; (B)—Fancy; (C)—Checks; (D)—Clays, Thibets, Serges (solid), Clay Mixtures, All Worsted Fancy, Cassimeres, Wool Cheviots, Cotton Worsteds (cheap grade); (E)—Dark Colors; (F)—Low Grade Cassimeres; (G)—$ .60 to $1.25.

Marx & Haas Clothing Co., St. Louis, (A)—Hard; (B)—Plain; (C)—Stripes; (D)—All Wool Cassimeres, Cotton Worsteds (both grades); (G)—$ .60 to $1.25.

Work Bros. & Co., Chicago, (A)—Hard; (B)—Fancy; (C)—Checks, Plaids; (D)—Clays, Thibets, Serges (solid), Worsted Cheviots, Clay Mixtures, Cotton Worsteds (cheap grade; (G)—$ .85 to $2.25.

Kahn Tailoring Co., Indianapolis, (A)—Rough; (B)—Fancy; (C)—Checks, Stripes; (D)—Clays, Serges (solid), All Worsted Fancy, Worsted Cheviots, Cassimeres.

Bloom, Cohn & Co., Cincinnati, O., (A)—Hard; (B)—Plain and Fancy; (C)—Checks, Plaids, Stripes; (D)—Clays, Thibets, Serges (solid), All Wool Cassimeres, Cotton Worsteds (both grades); (E)—General Lines; (G)—$ .60 to $ .75.

David N. Pfaelzer & Co., Chicago, (A) Hard; (B)—Plain; (D)—Serges (solid), All Worsted Fancy Cassimeres; (E)—Green; (F)—Cassimeres; (G)—$ .85 to $1.00.

Isadore Kaufman's Sons Co., N. Y. City, (A)—Hard; (B)—Fancy; (C)—Checks, Plaids; (D)—All Worsted Fancy, Cassimeres, Wool Cheviots; (E)—Blue, Brown; (G)—$ .80 to $1.00.

Feder Silberberg Co., Cincinnati, (A)—Hard; (B)—Plain; (D)—Clay, Serges (solid), Cassimeres, Cotton Worsteds (better grade); (E)—Dark Shades; (F)—Union and All Wool Cassimeres; (G)—$ .60 to $1.00.

Paul S. Levy Co., Baltimore, (A)—Hard; (B)—Fancy; (C)—Checks, Stripes; (D)—All Worsted Fancy, Cassimeres, Cotton Worsteds (both grades); (E)—Gray Mixtures; (F)—Union Cassimeres; (G)—$ .65 to $1.25.

Fechheimer, Keefer & Co. Cincinnati, (A)—Hard; (B)—Both; (C)—Checks, Plaids; (D)—Clays, Thibets (mixtures), All Worsted Fancy, Cassimeres, Cotton Worsteds (better grade); (E)—Dark Colors; (G)—$ .75 to $1.25.

B. Rothschild & Co., Rochester, N. Y., (A)—Rough; (B)—Fancy; (C)—Plaids; (D)—Thibets, Serges (solid), All Worsted Fancy, Worsted and Wool Cheviots; (E)—Slate, Green, Brown; (F)—Wool Cheviots.

Kuh, Nathan & Fischer Co., Chicago, (A)—Rough; (B)—Fancy; (C)—Plaids; (D)—Clays, Thibets, Serges (solid), Clay (mixtures), All Worsted Fancy, Worsted and Wool Cheviots, Cassimeres, Cotton Worsteds (cheap grade); (E)—Olive, Brown; (G)—$1.00 to $1.25.

Moore & Beirs, Rochester, N. Y., (D)—Clays, Thibets, Serges (solid), Clay (mixtures), All Worsted Fancy, Worsted Cheviots, Cassimeres; (G)—$ .90 to $1.50.

Glueckmann & Gross, New York, (A)—Rough; (B)—Fancy; (C)—Stripes; (D)—Clays, Thibets, Serges (solid), All Worsted Fancy, Worsted Cheviots, Cassimeres, Cotton Worsteds (both grades); (F)—Cheviots; (G)—$ .90 to $1.25.

Louis Holtz Sons, Rochester, N. Y., (A)—Both; (B)—Both; (C)—Checks, Plaids; (D)—Thibets, Serges (solid), Worsted and Wool Cheviots, Cassimeres; (E)—Brown, Wine, Blue, Olive; (G)—$1.00 to $2.75.

Smith, Chase & Cutting, Boston, (A)—Rough; (B)—Fancy; (C)—Checks; (D)—Clay, Thibets (solid), Serges (fancy), All Worsted Fancy, Worsted Cheviots, Cassimeres; (E)—Olive, Gray; (F)—Cassimeres; (G)—$ .75 to $1.50.

Strouse & Bros., Baltimore, Md., (A)—Rough; (B)—Fancy; (C)—Checks, Plaids, Stripes; (D)—Thibets, Serges (solid), All Worsted Fancy, Worsted and Wool Cheviots, Cassimeres, (E)—Gray, Green; (F)—All Wool Worsteds and Cheviots; (G)—Medium.

L. Michael & Co., New York, (A)—Both; (B)—Fancy; (C)—Plaids, Stripes; (D)—Clays, Serges (solid), Cassimeres, Cotton Worsteds (both grades); (E)—Brown, Green, Gray; (G)—$ .50 to $1.00.

Kearney Bros., Syracuse N. Y., (A)—Rough; (B)—Fancy; (C)—Checks; (D)—Clay, Serges (solid), Clay (mixtures), All Worsted Fancy, Cotton Worsteds (better grade); (E)—Oxford, Gray; (G)—$1.00 to $2.00.

J. Segall & Co., New York, (A)—Hard; (B)—Fancy; (C)—Plaids, Stripes; (D)—Thibets (solid and mixtures), Serges (solid and fancy), All Worsted Fancy, Worsted Cheviots and Cassimeres; (E)—Black, Blue, Olive, Green; (F)—Hard-faced Cassimeres and Worsted Goods; (G)—Medium.

W. & T. Allen & Co., Philadelphia, (A)—Hard; (B)—Plain; (C)—Checks; (D)—Clay Mixtures, All Worsted Fancy, Cassimeres, Cotton Worsteds (better grade); (G)—$ .90 to $1.00.

Shuter & Adler Bros., New York, (B)—Fancy; (C)—Checks, Stripes; (D)—All Worsted Fancy, Cassimeres, Cotton Worsteds (cheap grade); (E)—Medium and Dark.

Smith, Gray & Co., New York, (A)—Rough; (B)—Fancy; (C)—Plaids, Stripes; (D)—Clay, Thibets (solid), Worsted and Wool Cheviots, Cassimeres; (E)—Gray, Olive; (G)—$1.00 to $2.00.

C. D., (A)—Hard; (B)—Both; (C)—Checks, Stripes; (D)—Clays, Thibets, Serges (solid), All Worsted Fancy, Cassimeres, Cotton Worsteds (both grades); (E)—Blue, Black and Dark; (G)—$ .75 to $1.75.

Myers & Andrews, Boston, (A)—Hard; (B)—Both; (C)—Checks, Plaids, Stripes; (D)—Clays (solid), Serges (fancy), All Worsted Fancy; (E)—Blue, Blue-Gray; (G)—Medium.

S. W. Loomis, Boston, (A)—Rough; (B)—Fancy; (C)—Checks; (D)—Clay (solid), Serges (solid and fancy), All Worsted Fancy, Worsted Cheviots, Cotton Worsteds (better grade); (E)—Oxford, Gray, Olive Mixtures; (F)—All Worsted and Serges; (G)—$1.25 to $2.00.

Herman Kratzenstein & Co., New York, (A)—Hard; (B)—Both; (D)—Clays, Thibets, Serges (solid), All Worsted Fancy, Cassimeres; (E)—Dark Gray, Steel; (G)—$ .90 to $1.37.

Wm. Vogel & Son, New York, (A)—Rough; (B)—Fancy; (C)—Stripes; (D)—Thibets, Serges (solid), All Worsted Fancy, Worsted and Wool Cheviots.

M. H. Lauchheimer & Sons, Baltimore, (A)—Hard; (B)—Plain; (D)—Clays, Thibets, Serges (solid), Clay (mixtures), All Worsted Fancy, Cassimeres; (E)—Black, Blue, Gray, Olive; (F)—Woolens; (G)—$ .50 to $1.50.

S. Brafman & Sons, Baltimore, (A)—Hard; (B)—Plain; (D)—Clays, Serges (solid), Cassimeres; (G)—$5.00 to $12.00.

Henry Sonneborn & Co., Baltimore, (A)—Hard; (B)—Plain; (C)—Checks, Plaids; (D)—Clays, Thibets, Serges (solid), Clay (mixtures), All Worsted Fancy, Cassimeres, Wool Cheviots, Cotton Worsteds (both grades); (F)—Unions.

Franks Bros. Co., Philadelphia, (A)—Both; (B)—Fancy; (D)—Clays, Thibets, Serges (solid), Clay (mixtures), All Worsted Fancy, Worsted Cheviots, Cotton Worsteds (better grade); (E)—Dark Colors; (G)—$7.50 to $12.00.

Rinehard, Meyer & Co., Baltimore, (A)—Rough; (B)—Plain; (D)—Thibets (mixtures), Serges (solid and fancy), All Worsted Fancy, Worsted Cheviots; (E)—Oxford and Fancy Mixtures; (G)—$10.00 to $15.00.

M. Stoutenburgh & Co., Newark, N. J., (A)—Rough; (B)—Both; (C)—Checks, Plaids, Stripes; (D)—Clays (solid), Worsted Cheviots, All Wool Cassimeres, Cotton Worsteds, (better grades); (E)—Gray, Olive, Mixtures; (G)—$12.00 to $20.00.

Ehram & Stern, New York, (A)—Hard; (B)—Plain; (D)—Clays, Serges (solid), All Worsted Fancy, Cassimeres, Cotton Worsteds (better grade); (E)—Blue, Black; (F)—Unions; (G)—$ .60 to $1.00.

Cohen & Levy, New York, (A)—Smooth; (B)—Fancy; (C)—Checks, Plaids; (D)—Clays, Thibets, Serges (solid), Cotton Worsteds (both grades); (E)—Black, Blue; (F)—Union Cassimeres; (G)—$ .75 to $1.25.

Whitney, Christenson & Bullock, Chicago, (A)—Hard; (B)—Plain, Fancy; (C)—Checks; (D)—Clays, Thibets, Serges (solid), Clay (mixtures), All Worsted Fancy, Cassimeres; (E)—Gray; (F)—Smooth Cassimeres; (G)—$7.50 to $10.00.

Stern, Schaefer & Decker, Chicago, (B)—Both; (C)—Checks; (D)—Serges (solid), All Worsted Fancy, Cassimeres, Cotton Worsteds (cheap grade); (E)—Gray; (F)—Cheviots.

Spitz Bros. & Mork, Boston, (A)—Rough; (B)—Fancy; (C)—Checks, Stripes; (D)—All Worsted Fancy; (E)—Black, Blue, Gray, Green, Olive; (G)—$10.00 to $18.00.

Selling Direct.

The movement now being made by certain large concerns engaged in spinning cotton yarn, both in the Northern and Southern states, to dispense with the services of commission houses and sell their products direct to the knitters and weavers, is in line with the general tendency of the times to dispense with unnecessary charges on industry, and bring the consumer to the producer by the nearest way.

It is going back to first principles followed when manufacturing was in its infancy, and carried on by small concerns whose goods were sold or bartered to the actual consumer or small retailer.

As our modern factory system, with its large plants, developed, the method of selling the manufactured product underwent a corresponding change, and the commission house system, as it is known today, was the result.

This system is the result not only of the increase in the size of mills, but also of the growth of the credit system, and the necessity for an organization to care for sales and credits through such a large territory as is included in the United States.

It is needless to say that the commission house system accomplished effectively this work of distribution of goods, and management of credits.

And yet the effective work in these two directions has been to a large extent offset, in the opinion of many, more than counterbalanced by defects and abuses which have accompanied this system of selling goods.

The rapid growth of the textile industry and commission house system has been largely responsible for these abuses. This growth is well illustrated

by the fact that one of Massachusetts' prominent textile manufacturers who operates hundreds of looms, distributing his goods to the trade through commission houses, at one time loaded his cloths and yarns on a wagon, and personally drove from town to town through Massachusetts selling his goods direct in the fullest sense of the term.

This is not an exceptional case. That was the general custom seventy years ago, and has in that comparatively brief time been transformed into the present complex system.

The abuses of the later system have been well known, and there has always been a struggle on the part of the manufacturer against the abuses. These faults have been due to the system itself and not to the individuals conducting it. In any transaction between buyer and seller, the elimination of third parties tends to a good understanding and reduction of friction.

In most cases under the commission system, it has been impossible for the mill to receive due credit from the consumer for meritorious goods. No matter how well the goods were made, they were marketed under a ticket which gave no clew to the manufacturer's identity. The commission agent or middleman alone was known on the selling side of the transaction.

The mill in consequence lost a great incentive to progress. The commission merchant naturally was unwilling that their expensive organization should suddenly be deprived of business by the manufacturer's selling his own goods. No one could blame the merchant for that, and the result was that the goods continued to be sold under a blind ticket.

Then there has been the human weakness on the part of the commission merchant to make his business profitable by conceding to the demands of buyers.

Larger sales can be made at $1.00 per yard than at $1.10, with consequent increase of profit to buyer and commission merchant. No one can wonder at the pronounced tendency of selling agents to bear prices or bull qualities. It helped their business. The extension of credits and discounts encouraged by the selling agents comes under this head.

Then there are the claims of buyers. Even if unjust it is easier and more profitable to the selling agent to allow claims that the mill must pay, and thus avoid the expense of reselling goods in order to earn commissions.

In the textile industries where so great a variety of style and coloring is required, it is of the utmost importance that the manufacturer should be in close touch with the consumer, and be guided right in regard to the quality, coloring, and design of his goods. Here the commission system is often at fault. The directions it gives to the mill are colored by the personal tastes and opinions of the selling agents, instead of being the expression of the general tendency of fashion as discovered by personal contact with the buyers. The large stocks of unmerchantable goods, or the vast numbers of expensive samples which "did not sell," make up the evidence on this point.

With all its faults this system of selling has been, and still is, in great measure indispensable. The movement now in progress on the part of cotton yarn manufacturers to sell direct is in line with the constant effort of manufacturers to correct the faults of old methods, a part of which we have mentioned.

The wide attention which present developments receive are due more to the extent of the interests involved than to any novelty in the thing itself.

—Many mechanics will have their patience sorely tried when pouring melted lead around a damp or wet joint to find it explode, blow out or scatter from the effects of steam generated by the heat of the lead. The whole trouble may be stopped by putting a piece of resin the size of a man's thumb into the ladle, and allowing it to melt before pouring.

Rainy Day Skirtings.

The popularity of the rainy day skirt has been of doubtful value to the clothing manufacturer owing to the shortness of these garments, which resulted in materially shortening the number of yards consumed. But in spite of this fact the manufacture of cloth for these skirts has given work to many mills, and while the plaid back feature of the fabric is losing favor, the old fabrics are likely to retain their popularity.

The first fabrics which appeared on the market in light weights were made from all wool stock, and such remarkable values were offered to the purchaser that it was a wonder in the trade how the mills could do it. There has been a large demand for these goods, however, in heavier weights ranging from 18 to 24 ounces per 6/4 yard. This extra weight is not objectionable in a short skirt, as it affords welcome protection from the cold, wet weather to which the wearer is exposed.

In these heavy fabrics we find large quantities of wool substitutes used. In order to make the plaid back effective, it is necessary to have bright, clear colors which could not be made on shoddy, and consequently cotton has to a large extent been employed to cheapen the goods in both back and face.

The high price of wool has also made necessary the use of substitutes. If wool is selling at 55 cents per pound, and the trade asks for a 21 ounce piece of goods for $1.10 per yard, there is but one way for the manufacturer to do it and avoid bankruptcy, namely, use cotton and shoddy.

We show in the illustration four samples of these fabrics which have appeared in low grade.

No. 298, sold by H. J. Libbey & Co. at $1.35, allowing 20 per cent. for selling, would net the mill $1.08. This fabric weighs 18 ounces per yard. The cotton is in the white threads used for plaiding the back. The balance of the fabric is all wool stock of fine, medium quality, consequently the average amount of cotton in the entire fabric would not exceed 1 per cent. This is too small to materially reduce cost, and it is of doubtful expediency as the right to sell the goods as all wool is lost without any appreciable reduction in cost.

The finished cloth has 63 threads of warp and 57 threads of filling per inch. The cost estimate is as follows: Stock, .609; labor, .276; expense, .123; total, $1.008 per yard, showing a paper profit of 7 2/10 cents per yard.

No. 299, sold by Nostrand and Moore for $1.10 per yard, allowing 20 per cent. for selling, would net 88 cents. It weighs 23 ounces per yard. The cotton, confined to the white and gray backing threads, which contain 32 per cent., averages 13 8/10 per cent. for the whole fabric.

The face is a wool stock of coarse quality. There are 48 threads of warp and 45 threads of filling per inch of finished goods. The estimate on the cost is as follows: Stock, .396; labor, .235; expense, .133; total, .764 per yard, or .116 less than the apparent net return to the mill.

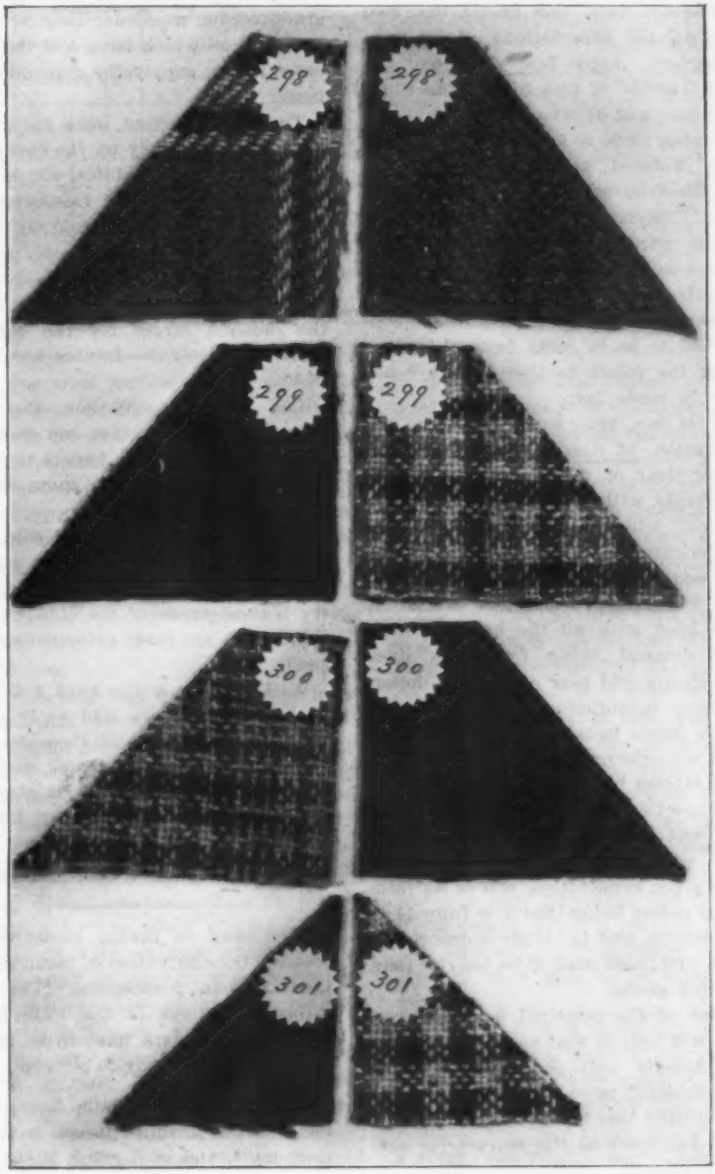
No. 300 is a fabric sold by F. Vietor and Achelis for $1.12½ per yard, and with 20 per cent. allowed for selling, would net the mill 90 cents per yard. It weighs 21½ ounces per yard, and has 68 threads of warp and 64 threads of filling per inch of finished goods.

The cotton is introduced in both back and face, the fabric containing 53 per cent. of this fibre. The estimate of cost is as follows: Stock, .338; labor, .28; expense, .155; total, .773, or .127 under the apparent net price of the goods to the mill.

No. 301 is a cloth sold by Deering, Milliken & Co. for $1.12½ per yard, and with 20 per cent. deducted for selling expenses, would net the mill 90 cents per yard. The weight is 21½ ounces per 6/4 yard, and there are 70 warp threads and 46 filling threads per inch of finished goods. Like the preceding fabric, it contains a large amount of cotton in both face and back, the average percentage being 37.

The cost is estimated as follows:

Stock, .352; labor, .256; expense, .14; total. .748, or .152 per yard less than the apparent return to the mill. These estimates are based upon 12-cent cotton, 46-cent wool, and 20-cent shoddy. They are offered simply as careful estimates of these fabrics. The actual cost may have been more in the mills where they were made. There are the additional items for interest and discount on cancelled and left over goods, which would reduce the apparent profit.



RAINY DAY SKIRTINGS.

We can see little in these figures to encourage a manufacturer to make the goods.

Cotton Worsteds.

The past few seasons have witnessed the growing demand for cotton worsteds, until this fabric has sold beyond the expectations of the most sanguine. Some few years ago the chief maker of this fabric was Chas. Fletcher and he was considered by the clothing trade to be "king" of the cotton worsted goods. The first line which attracted much attention was the "Gloriana" fabric, which was made with fine worsted and cotton yarns and produced a very fine face, which looked excellent when in the finished garment, and would have continued to be in great demand, except that the colors in these goods could not be made fast.

This fact, after awhile, came to the attention of the buyers, and they steer clear of these grades of cotton worsteds with fugitive colors. This fabric, which is now sold by the American Woolen Co., was $1.30 the present season, and it is reported that the sales have been light, and so it has been with all the better grades, the demand being for those lines which are sold near or below a dollar.

Some manufacturers made lines of these goods to sell from $1.20 to $1.35 and with the exception of one instance the fabrics have all been withdrawn; the one line which is still in the market and has been sold extensively, is one which was made last year, and has given satisfaction, one of its principal points being that it is fully 14 to 15 ounces, and is chiefly a trousering line, and these need to be heavier than suiting goods.

One of the principal makes of cotton worsteds is that sold by F. Vietor & Achelis and is known as the "Rangeley," price $1.05. This line is one of the best in the vicinity of $1.00 and has been on the market for several seasons.

There are many other lines which have been sold near this figure; that of the Kessel Department at H. Hablo & Co., being the Westfields at $1.05. H. & W. H. Lewis also have a line at $1.10 which has been sold quite largely.

These few lines have been and are the principal ones in the medium grade cotton worsteds; they are just above those which have had the largest sale, but supply the demand for a better grade.

The higher priced lines have been hurt very materially by the cheapness of the all worsted fabrics, which have sold as low as $1.17½, this being the price of the "Eatons" sold by Sullivan, Vail & Co., and are simply quoted as an instance of the cheapness of all worsted goods; this fact has also made the demand larger for the cheaper grades, that is, the fabrics less than $1.00.

The American Woolen Co. had many lines in this class, but they are not considered by the buyers to be as sightly or as cheap as some of the outside lines.

The "French Rivers" sold by Cooley, Turnbull & Co. at 80 and 85 cents, are a very popular line, and are the highest grade of the cheaper fabrics, which are made principally in ¾ goods.

W. L. Strong & Co. have a line of ¾ goods, which are sold at 30 cents less 2½ per cent., and these have a fine three harness twill face, and are made in bright colors, as is also the line sold by Greely, Cushman Record at 31½ cents less 2 per cent., and that by Schnabel Bros. at 30 cents.

—Germany is taking measures to promote the cultivation of hemp in her East African possessions. The disturbed conditions in the Philippines during recent years, has caused prices for hemp to rise fully 50 per cent.

—The high price of cotton has caused the Spanish manufacturers to close their mills, and as a result 30,000 cotton mill operatives are out of employment in the province of Barcelona.

—In ancient Greece and Rome, garments of woolen were in general use, linen being worn by women only.

WOOL MARKET.

The wool market during September has been dull and lifeless. Manufacturers have occasionally appeared and ordered sample bags sent to the mill to be tested.

They evidently remember the experience of 1892, when they carried large stocks of wool and goods up to election day, and saw the value of their stock shrink one half during the next year as a consequence of that election.

This year they are in no mood to repeat that experience, and consequently the wool dealer and grower are carrying the load, and taking the risk of an election of a free wool, free silver administration.

This policy of reducing stocks is being followed by the clothier and clothing dealer as well. This is plainly shown by the small volume of business on light weights which has not, according to current reports reached 50 per cent. of an average season's business.

Both the manufacturer of cloth and the clothier by this course, say plainly that they will do business when the consumer begins to consume, and in the meantime the grower and dealer in wool can have all the speculative risk which ownership of wool on the eve of this Presidential election, entails.

This is a sound tendency of trade. It requires far less capital to carry wool as it comes from the sheep's back than when it has been converted into cloth or clothing, and its cost greatly enhanced by labor and other charges.

Prices have eased off somewhat during the month, but in view of the stagnation of trade it is a wonder that values have not shrunk more.

The sales in the three chief markets of the United States for four weeks of September, are reported at 10,883,493 lbs., as compared with over 40,000,000 lbs. for same period of 1899. The trade a year ago was in the midst of the wild speculative whirl which carried conservative men along with it, and pushed the quotation for fine medium territory to 62c. per pound before the end of the following January. That wave is now receding, and the extreme height which it reached then is now causing a correspondingly large area of mud flats to be exposed to view.

Both buyer and seller are waiting for the election returns, and as one shrewd manufacturer summed up the situation: "After election the woolen business will be a great deal better or a great deal worse."

The wool markets abroad are passing through a similar period of depression, and as they are facing no possible change of government policy, the reason generally assigned for the

depression there, is the reaction after the boom.

The collapse of the speculation in wool futures at Roubaix, France, which has spread ruin in the trade there, has had no effect here or in other wool centers.

But the gradual shrinkage in wool values which has been in progress since January of this year, has undoubtedly caused heavy losses to both dealer and grower on this side of the Atlantic. The prolonged strain and steady declines have resulted in some embarrassment, one of them being of large proportions. So far, events have justified the persistent policy of manufacturers to carry light stocks of wool.

EXPORTS AND IMPORTS OF RAW WOOL, YARN AND WASTE.

Lbs. in units of one million. Value in units of $'00,000.

Year Ending June 30.	Exports.		Imports.					
	Wool.		Wool.		Shoddy, noils, etc.		Yarn.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.
1890	.231	.335	106.8	152.6	5.0	20.5	3.5	19.9
1891	.291	.394	129.3	182.4	1.2	4.3	2.0	11.9
1892	.202	.306	148.7	196.8	.8	.9	1.3	7.5
1893	.091	.148	172.4	210.6	.3	1.1	1.2	6.9
1894	.520	.906	55.2	61.1	.1	.5	.5	3.6
1895	4.289	4.844	192.8	229.9	14.1	19.8	2.4	11.7
1896	6.945	8.559	228.4	315.0	18.7	26.5	2.0	10.5
1897	5.271	6.199	366.6	567.5	49.9	69.3	1.8	9.6
1898	.121	.180	132.8	167.8	3.3	6.9	.3	1.9
1899	1.623	2.373	76.7	83.2	.3	.7	.2	1.1
1900	2.200	3.872	155.9	202.6	.4	.9	.2	1.3
July	.001	.002	7.7	10.6	.017	.059	.018	.132
Aug	..	..	6.8	9.2	.047	.182	.022	.161

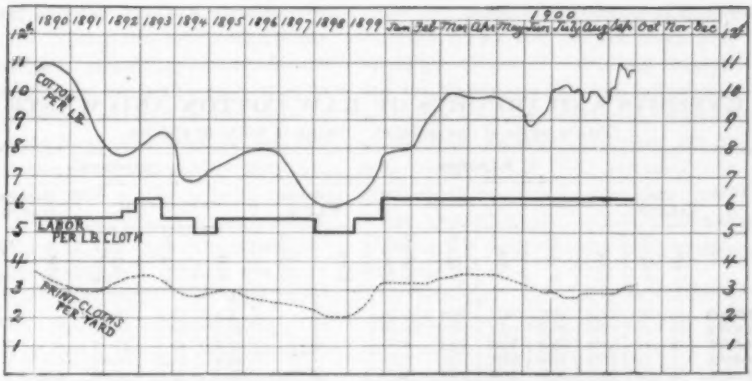
EXPORTS AND IMPORTS OF MANUFACTURED WOOLENS.

Value in units of $100,000.

Year Ending June 30.	Exports — Value.						Imports — Value.							
	Carpets.	Dress Goods.	Flannels and Blankets.	Apparel.	Other.	Total	Carpets.	Cloths.	Dress Goods.	Shawls.	Clothing	Knit Goods.	Other.	Total.
1890	.067	..	.409	3.179	.719	4.374	7.5	161.4	242.0	10.1	18.4	19.8	66.2	525.4
1891	.184	..	.265	4.240	.502	5.191	13.7	120.3	182.4	7.2	18.6	12.5	39.7	394.4
1892	.093	..	.244	2.689	.649	3.675	12.9	127.6	164.7	3.5	14.8	11.6	12.1	347.2
1893	.115	..	.242	2.224	.679	3.260	15.8	151.2	164.8	2.8	11.7	14.1	12.0	372.4
1894	2.500	..	.387	3.172	1.685	7.744	9.6	67.6	85.8	1.6	8.6	10.0	7.2	190.4
1895	1.610	..	.498	3.161	1.432	6.701	13.6	163.0	144.0	2.0	10.0	9.4	11.8	353.8
1896	2.252	..	.370	3.055	2.860	9.135	8.9	218.9	199.3	4.5	13.0	25.4	27.4	497.4
1897	1.895	..	.573	3.858	3.150	9.476	7.8	170.1	167.9	4.6	9.8	25.3	27.0	412.5
1898	1.642	.414	.474	4.290	4.074	10.89	17.9	89.6	60.4	.4	7.6	3.9	9.6	189.4
1899	.811	.169	.427	5.388	3.679	10.47	17.6	39.1	59.1	.5	8.3	6.3	5.6	136.5
1900	1.150	.244	1.002	5.654	4.485	12.54	27.5	51.3	58.7	.8	9.9	5.0	6.3	159.5
July	.076	.004	.038	.429	.488	1.055	3.02	7.25	8.52	.07	.06	.46	.55	19.93
Aug.	.084	..	.146	.736	.726	1.682	2.77	5.85	6.22	.15	1.79	.42	.48	17.68

—The U. S. vice-consul at Frankfort says that the German papers speak in alarming tones of the sad position of the textile industry, where stoppages of factories are the order of the day. Late statistics of the Gera district show 6,022 looms idle, out of a total of 11,829. The weavers still employed there earn but 8 to 10 marks ($1.904 to $2.38) per week. This wretched wage, which is to support a family, is next to a starvation rate, especially as fuel and provisions have greatly advanced in price and the poor operative must pay Government tax and school rate besides.

COTTON MARKET.


1890 1891 1892 1893 1894 1895 1896 1897 1898 1899
1900
Jan Feb Mch Apl May Jun July Aug Sep Oct Nov Dec
COTTON PER LB
LABOR PER LB. CLOTH
PRINT CLOTHS PER YARD

Graphic Chart of Fluctuations in prices of Cotton, Labor and Print Cloths.

The fear of a cotton famine which had hovered over the world's cotton markets for many months, was replaced, as September opened, with the actual pinch of famine in the English markets when the condition was aggravated by the scarcity of ocean transportation.

For ten days previous to the 1st of September, practically every bale of tenderable cotton in Liverpool had been taken from the market, and the closing up of August contracts had no effect in relieving prices at that port.

The Gulf hurricane which nearly wiped Galveston out of evistence, still further aggravated the situation, and sent cotton soaring to 11 cents per pound for middling uplands at New York, a figure which has not been duplicated since early in 1890.

The price was, as is usually the case, carried beyond the point at which it could be maintained and, in the consequent reaction it touched 10½c.

In addition to the loss by the Gulf storm, reports from the fields have been unfavorable, and the trade has settled upon a point somewhere between 9,000,000 and 9,500,000 bales as the size of the new crop.

This taken in connection with a visible supply of the old crop, 1,500,000 bales less than in 1899, and with the still more potent although less apparent fact that the invisible stock has been practically wiped out, means that the new crop will fall far short of restoring the stocks of cotton to a normal condition throughout the world.

Cotton mills in Europe, both on the Continent and in England are closed because they can get no raw material. The same condition exists in the United States, both North and South.

The supply from the new crop will be subjected to the full force of the world's demand, and it is needless to add that the greater part of this supply must come from our Southern cotton fields.

The cotton goods market has been stronger in sympathy with the higher prices for the staple and the forced curtailment of production. The price for print cloth at Fall River rose from 2⅞ to 3⅛ cents per yard.

The American market for manufactured cottons is suffering from the influence of the approaching presidential election and for this reason fails to respond to the full extent of the rise in raw cotton prices which are regulated by the world's demand and supply. The result is that mills have been forced to shut down for two good reasons: lack of cotton and low prices for goods.

With the conditions existing, which have been enumerated in this article,

there is very fair prospect for dear cotton. The 1900 and 1901 crop of cotton is in fact likely to be King.

The Chronicle reports the visible supply Sept. 28th, at 1,143,161 bales as compared with 2,517,671 bales in 1899.

EXPORTS AND IMPORTS OF RAW COTTON AND WASTE.

Lbs. in units of one million. Value in units of $100,000.

Year Ending June 30.	Exports.									Imports.				
	Sea Island.		Other.		Total.			Cotton Waste.		Raw Cotton.			Cotton Waste.	
	Lbs.	Value.	Lbs.	Value.	Lbs.	Value.	Value. per lb.	Lbs.	Value.	Lbs.	Value.	Value per lb	Lbs.	Value
1890	9	23	2462	2486	2471	2509	10.15	..	..	8.6	13.9	16.16	..	..
1891	14	31	2893	2876	2907	2907	10.00	..	..	20.9	28.2	13.49	..	..
1892	19	16	2926	2568	2945	2584	8.77	..	..	28.7	32.1	11.18	..	..
1893	8	17	2204	1870	2212	1887	8.53	..	..	43.4	46.9	10.80	1.9	.8
1894	14	29	2669	2080	2683	2109	7.82	..	..	27.7	30	10.83	2.7	.9
1895	15	28	3502	2021	3517	2049	5.82	..	..	49.3	47	9.53	2.9	1
1896	19	38	2316	1864	2335	1900	8.13	..	..	55.3	66	11.93	6	2.1
1897	21	41	3082	2268	3103	2309	7.12	..	..	51.9	59	11.36	5.3	1.7
1898	16	28	3834	2277	3850	2304	5.98	19.1	7.9	52.7	50	9.48	6.7	1.5
1899	14	24	3759	2072	3773	2096	5.55	21.1	8.3	50.4	50.1	9.96	6	2.1
1900	18	30	3082	2388	3100	2418	7.80	39.	17.7	67.4	79.6	11.81	7.9	2.4
July	..	..	77.5	76.5	..	..	9.86	1.71	.81	1.88	2.69	14.31	.39	.14
Aug.	..	..	54.0	52.4	54.0	52.4	9.70	2.85	1.28	1.22	1.53	12.50	.54	.18

EXPORTS AND IMPORTS OF MANUFACTURED COTTONS.

Value in units of $100,000.

Year Ending June 30.	Exports — Value.					Imports — Value.							
	Colored.	Uncolored.	Apparel.	Other.	Total.	Colored.	Uncolored.	Apparel	Laces, etc.	Thread.	Knit Goods.	Other.	Total.
1890	29	55	2	14	100	33.7	1.3	3.4	114.5	9	71.5	65.8	299.2
1891	26	93	3	15	137	42.4	1.7	12	105.9	8.6	67.4	59.2	297.2
1892	25	87	4	16	132	45	1.4	12.6	112.5	6.6	58.3	46.7	283.1
1893	28	63	5	22	118	55.4	2.6	16.8	127.4	7.6	63.9	61.8	335.5
1894	38	76	5	24	143	33.8	1	16.6	80.2	3.3	43.6	45	223.5
1895	35	70	5	28	138	54.3	1.2	27.7	116.9	6.6	65.4	59.9	332
1896	34	95	7	32	168	49.2	1.8	26.8	108.8	8.7	61.9	67.1	324.3
1897	48	125	9	29	211	44	2.7	26.3	125.7	6.5	56	83	344.2
1898	41	92	9	25	167	53.1	1.2	10.5	117.7	6.9	40.3	42.9	272.6
1899	52	138	13	30	233	66.5	1.1	10.3	145.5	8.5	43.4	45.3	320.6
1900	48	132	16	37	233	81.6	3.6	12.4	192.1	21	47.2	55.3	413.2
July	4.58	10.28	1.06	2.66	18.58	3.55	.07	.91	14.42	2.82	4.17	6.59	32.05
Aug.	4.15	3.12	1.31	2.55	11.13	2.72	.07	1.52	13.70	1.77	4.65	6.17	32.60

Measuring, Folding and Winding Cloth.

It is not very many years ago when the majority of textile mills on broad goods measured their finished product by means of a yard-stick, and folded the goods laboriously by hand. These methods have long been relegated to the rear by improved machinery. In the old days, it was considered quite a knack to measure accurately with the yard-stick, and it probably was quite a knack, if not impossible, to do it accurately. One finisher we have heard of, whose duty it was besides finishing the goods to measure and ticket them, and after several years had passed, during which he had gradually built up a reputation for expert and accurate work as measurer, an accidental re-measuring of a large number of pieces which had been sent to market, and from which the tickets had been torn, disclosed the fact that the goods were much longer than the finisher's measurement, and an examination of his work proved that for

every length of the yard-stick he was giving a "thumb." The "thumb" proved a rather expensive matter for the mill during the years which the finisher was measuring the goods.

This system gradually gave way to one in which a table, either four or five yards long, was used. At one end was stationed a hand to stick pins into the goods, and at the other end another operative pulled the goods along the length of the table and stuck the pin into a cushion. When the piece had been measured, the pins were counted up and multiplied by the length of the table, and the fractional part over an even number of lengths was added, and the busy operative stuck the ticket in the folds of the goods, to be found later by the man who folded them.

This folding operation was also done by hand, and involved considerable labor. After the goods had been folded, they were rolled by hand. An up-to-date method at that time consisted in having a large wooden roll, say from 12 to 16 inches in diameter, and the width of the goods placed on the piece which was lying on the table. This gave the necessary tension to the goods, while the man stood at the other end of the table and wound the goods on a cloth board, the movement of the material gradually pulling the roll up to where he stood, and then he would give it a shove and roll it back to the other end of the table, repeating the operation until the piece was rolled.

The ticket in the meantime was supposed to be somewhere in some of the folds of the piece to which it belonged. Very often it became mislaid, or the tickets for different pieces were exchanged, causing confusion and serious mistakes. In addition to this, it required much experience on the part of the operatives to measure, fold and roll the goods properly, and even at the best the edges were apt to be uneven and the cloth wound soft.

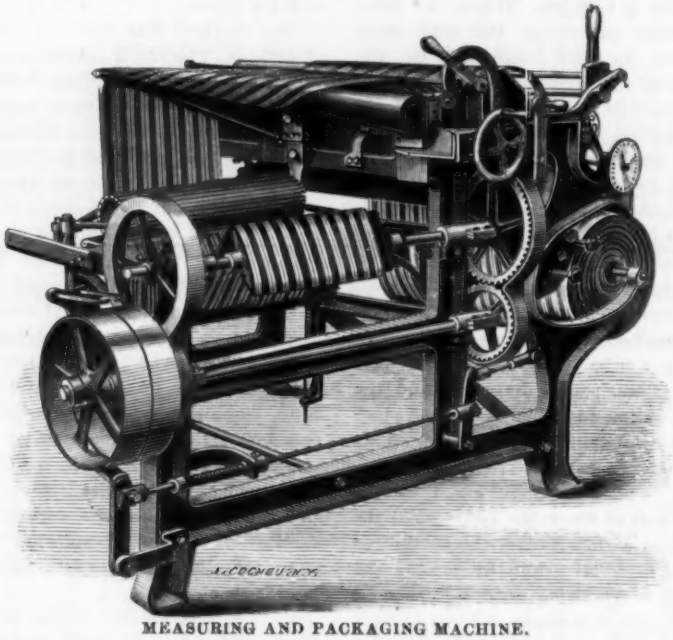
Later, a device was invented and attached to the measuring table, by which one hand was dispensed with; it consisted of a handle, to which a wire was attached running to the other end of the table, and at this end suitable levers and holders were provided for a piece of chalk, and by pulling the handle at the end where the measurer stood, it would make a chalk mark, thus marking the piece off in table lengths. A dial recorded the number of lengths in the piece, and when beginning the measurement of a piece, the dial was set back to the starting place.

This method was open to various objections. The chalk marks were objectionable, the dial often failed to work, and this resulted in an indicated measurement less than the actual. The goods could be measured upside down, thus bringing the mark on the back of the goods, but by so doing the advantage of an examination of the face of the goods was lost. This device still left the folding and winding to be done by hand. The next step was to provide a machine for folding and winding. This was accomplished with a fair measure of success, and separate machines were invented for measuring the goods. Most of them consisted of a roll over which the goods run, and the circumference of this roll was made of a certain size, so that by means of suitable worm gears and dials the measure would be indicated.

A very convenient device of this kind consisted in having a slot in the roll, and when the goods were not on the roll, a finger was lifted out of the slot, and by means of a lever, threw the recording mechanism into gear, keeping it in motion as long as the cloth was running over the roll. As soon as the end of the piece was reached, however, the finger dropped back into this slot in the roll. This disconnected the gearing and stopped the winding of the dial. The need for a machine which would measure, fold and roll the goods was still unsupplied.

The work of inventors has finally produced a machine which accomplishes these three operations at

one time, and in addition to this, accurately marks upon the back of the margin, or near the folded edge, the number of yards and quarter of yards consecutively to the end of the piece. This latter feature is of great advantage, because it remedies the trouble which is experienced in keeping track of the length of a piece of goods after it has been cut. To be sure, the length cut off can be marked on the piece, and an attempt is made to do this, but after four or five different lengths have been cut off by as many different persons, the ticket begins to have a rather complex appearance. Different lengths marked down in different handwritings are to be added up by other mathematicians, and subtracted from the original length. The result which must be accepted, is often very far from the correct one, on account of errors and omissions. Then again, if the result was not accepted, it would be necessary to unroll the piece and measure it with a yard-stick, with all the shortcomings which that implies.



MEASURING AND PACKAGING MACHINE.

The Fabric Measuring and Packaging Company, Postal Telegraph Building, Broadway and Murray Street, New York, N. Y., have placed a machine on the market which it is claimed combines all of the desirable features to which we have referred. The goods are measured, marked, folded, and evenly rolled into a neat package at one operation. The accurate measurement of the goods prevents claims for short measure and loss for over measure. The machine which is shown in the illustration requires only one young man to run it, and will put up any width of single or double fold cotton or woolen fabric, tickings, cretonnes, upholstery goods or carpets. In addition to this, the manufacturers claim that it furnishes a reliable method of measurement for single or double fold elastic fabrics.

The marking of the length on the margin or folded edge of the goods furnishes a ready means of learning how many yards remain in a piece partly used. These machines have been in use for several years in many of our leading mills, and, judging by the testimonials, have given entire

satisfaction. By this machine the trade-mark also can be stamped on textile goods at regular distances so that it is in plain sight until the fabric is made into a garment. This feature will be appreciated by manufacturers who are utilizing the protection and advertisement which an established and well-known trade-mark affords.

A serious difficulty which textile mills have contended with is that the name of the mill has not been known in the market owing to the desire of selling agents to have their name instead of that of the mill identified with the fabric. The use of this machine remedies this trouble at once and thoroughly. With the trade-mark stamped on the goods at frequent intervals, the manufacturer's name or other mark will be kept constantly before the jobber, retailer and in many cases consumer, as well as before the commission agent. No more effective means of advertisement could be devised.

We mention a few of the mills using them: Dutchess Co.; Silver Springs Bleachery and Dye Works; Arnold Print Works; Atlantic Mills, Providence, R. I.; Quaker City Dye Works, Philadelphia, Pa.; Alex. Smith & Sons' Co.; E. S. Higgins & Co., New York; M. J. Whittall; Talbot Mills; Alberfoyle Co.; Joseph Bancroft & Sons Co.

Following is a letter in regard to this machine from H. Lippitt & Co., Providence, R. I., which speaks for itself:—

Fabric Measuring & Packaging Co.,
105 Hudson St., New York:

Gentlemen:—In reply to your favor of the 13th, will say that your measuring machine, which we now have had about a year, is giving perfect satisfaction in every way, and we cannot help feeling that it has saved us its cost long ago. Where we used to have claims constantly for short measure, we hardly ever have one now, neither do we have to allow extra cloth at the end of the piece to be sure we give full measure to the customer. Yours truly,

Lippitt Woolen Co.
R. Lincoln Lippitt, Agt.

Such well known trade-marks as Amisilk, Aberfoyle, Nearsilk, and Rockford Velvesilk, are printed by this machine.

The Brandy Fibre Cleaner.

Attention is called to the advertisement, on another page, in which appears the cut of the new Brandy Fibre Cleaner, which is being brought out by the Leland Belting Co., Lawrence, Mass. Numbers of these machines have already been built on order after careful investigation of the claims made.

It is designed to clean scoured wools, cotton, flax, hair and other fibres without injury to the staple. The principle is very simple, and consists in blowing a powerful blast of air through the staple while in transit from the feed to outlet between the two cylinders. It takes scoured wool, either long or short staple, directly from the dryer, opens and cleans it without the slightest injury to the staple, and yet putting it in perfect condition for carding. It is claimed to clean scoured seedy wool to perfection, leaving the staple light and lofty. Card strippings and card wastes and all other low grades of stock can be handled and cleaned without knotting, rolling or pilling.

The builders claim that besides putting the stock in better shape, with the result of better roping from the cards, the Brandy Fibre Cleaner saves its cost in wear and tear of the subsequent machinery.

It occupies a floor space of 15x5, and has a capacity of 2500 to 5,000 lbs. per day, depending on the stock treated.

The Leland Belting Co. suggests to manufacturers who are desirous of testing its merits that they send a sample bag of any stock that they wish treated, and it will be put through the cleaner and returned

without any expense except cost of transportation.

Before putting the machine on the market, it has been thoroughly tested under all possible conditions, and the design and construction adapted for utility and hard service.

Delahunty's Dyeing Machine.

This machine, for coloring shirts, drawers, hosiery, hats, caps, etc., shown in the accompanying illustration, is composed of a stationary vat, the ends of which are built to conform to the diameter of the rotating cylinder, which revolves in the vat, about one-half submerged in the dyeing liquor.

Across the face of this cylinder are eight cross bars, at equal distance apart, each containing six pins. These pins revolving with the cylinder, keep the goods in a loose state, while the dyeing operation is going on, and at each revolution brings a portion of the goods out of the liquor, and holds them until the proper angle is reached, when the goods slip off the pins back into the liquor. By this method every piece of goods in the cylinder receives the same treatment, and being always in a loose open state, the liquor penetrates the goods freely and thoroughly, coloring body and seams uniformly.

There are no compartments, pockets, or open cylinders in this machine, and, consequently, the goods do not become bunched, massed, or tangled up, and on account of the goods being brought out of the liquor and exposed to the air, they are fully and uniformly oxidized.

Slides, two of each, shown in the illustration, leaning against the dyeing machine, are provided for taking the goods out of the machine when the dyeing operation is completed. These slides, which are built with open slat work, are entered at each of the two doors, and the goods are brought up from the liquor to drain at the same time and with one movement of the machine. This work requires from three to five minutes. The builders claim that the quick handling of the goods in loading and unloading of the machine, and the large quantity colored at one time, increase the capacity two or three times more than with a compartment machine where there is no special device provided for putting in and taking out the goods in a short time.

Owing to the machine being tightly closed while the dyeing operation is in process, it takes much less steam to keep the liquor boiling, and the full strength of the dyestuff is utilized.

The standard size of this machine is: cylinder, 8 feet in diameter; width of machine over all, 6 3-4 feet; length, 11 feet; giving a capacity of from 300 to 400 pounds per tub, and requiring 1 1-2 H. P. to operate it.

The builders are so confident of the merits of this dyeing machine, which has been demonstrated by practical work in many mills, and for many years, that they offer to place them on trial.

In addition to the machine for coloring knit goods, the Delahunty Dyeing Machine Company also manufacture dyeing machinery for raw stock, wool and cotton rags, shoddy, waste, etc. Their dyeing machinery is widely and favorably known among manufacturers.

Following is a partial list of recent orders received for their machines:—

For the Hosiery Dyeing Machine: Fort Wayne Knitting Mills, Fort Wayne, Ind.; Pilling & Madley, Philadelphia; Lawrence Mfg. Co., Lawrence, Mass.; Valentine Knitting Co., Bennington, Vt.; Des Moines Knitting Mills, Des Moines, Ia.; Windmere Knitting Mills, Albermarle, N. C.; T. A. Harris & Co., Philadelphia; Fay Stocking Co., Elyria, Ohio; Lawrence Dye Works, Lawrence, Mass.; Excelsior Knitting Mills Union, N. C.; Dixie Mills, Lenoir City, Tenn.

For Raw Stock Dyeing Machines: Perry Knitting Co., Perry, N. Y.; Eagle & Phoenix Mfg. Co., Columbus, Ga.; Indian Orchard Co., Indian Orchard, Mass.; Thos. M. Holt, Haw

River, N. C.; Littlewood & Sons, Manayunk, Pa.; Oneida Cotton Mills, Graham, N. C.; Uncasville Cotton Mfg. Co., Uncasville, Ct.; York Manufacturing Co., Saco, Me.; Odell Manufacturing Co., Concord, N. C.; W. J. Dickey, Oella, Md.; Tremont & Suffolk Mills, Lowell, Mass.; Saxonville Mills, Saxonville, Mass.; Bibb Mfg. Co., Macon, Ga.; Waterloo Woolen Mfg. Co., Waterloo, N. Y.; Nashua Mfg. Co., Nashua, N. H., and others.

Further information in regard to this dyeing machine or any others of their make will be cheerfully given by the builders, The Delahunty Dyeing Machine Company, Pittston, Pa.

THE DELAHUNTY KNIT GOODS PIECE DYEING MACHINE.

—The English knit goods manufacturers are, according to the Leicester, Eng., Hosiery Trade Journal, somewhat disturbed over the appearance of American knit underwear in their market and are wondering how the Yankee can pay high wages and yet sell goods in direct competition with the English goods. They now look upon it as the direct result of hustle.

—Spots caused by mineral oil are removed by a preparation made as follows: 5 quarts water, 12 ozs. soap, 6 ozs. ammoniac or soda, 3 ozs. ammonia soap, 1½ ozs. aniline or phenol. The cloth containing the spots is soaked in this liquid for about twelve hours, and then rinsed in warm water.

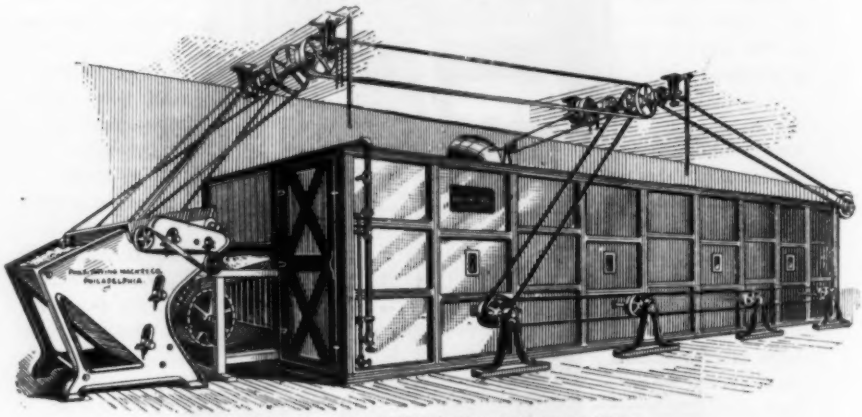
—Grease spots on silk or other fine stuffs can be removed with the magnesia and benzine paste; another method is to cover the spot with gum arabic, and, when the gum is dry, striking the cloth with a sponge saturated with sulphurous or petroleum ether.

Hurricane Automatic Stock Dryer.

The success which this dryer has met with wherever used, is due in great measure to the principle of graded temperatures by which the stock is subjected to the highest temperature when it holds the most moisture; the heat is gradually reduced as the drying process proceeds, thus avoiding the "baking" process resulting from subjecting dry stock to high temperatures.

This excellent principle has been facilitated by the self feeding mechanism, which is shown in the illustration. As the stock enters the self feed, it is elevated by the spiked apron, and any surplus masses of cotton are combed back into the box, while an even amount of stock is carried forward, and, if there are any heavy masses matted together, they are picked apart and separated by the action of the opener. As the opener revolves at a high speed, it not only shakes the grit and dirt out of the stock, but it also distributes the stock lightly on the apron of the dryer and mixes it thoroughly. Any small particles of stock remaining on the apron are entirely removed by the action of the doffer, placed underneath the apron on the return side.

On entering the dryer, the stock is thus of such an open lofty nature that the rapid circulation of the hot air immediately causes the moisture to be evaporated, and the damp air is carried off at once, through an exhaust pipe attached to the top of the first compartment of the dryer. Travelling continuously through the machine from one compartment to another, since the temperature is reduced in each succeeding compartment, the stock is finally delivered at the opposite end of the machine; it is not only dried but is also thoroughly cooled and in the best possible condition for handling. The Philadelphia Drying Machine Co., 6721 Germantown Ave., build these machines in various sizes, ranging in capacity from 1000 lbs. to 20,000 lbs. per 10 hours.



"HURRICANE" AUTOMATIC STOCK DRYER.

—Enquiries made by our consuls in Mexico, Central and South America as to the knit goods industry in these countries elicited no information beyond the well known facts that there is very little knitting done there, and that the goods consumed come from European countries. Information as to the style, quality and price of goods used in foreign markets would be of more interest to our manufacturers.

—The president and first graduating class of Brown University, in 1769, were clothed in garments made from wool grown within the borders of the Rhode Island plantation.

WOOLEN DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Scouring Woolen Goods.

Woolen goods must be clean, free from grease, and all other foreign matter, otherwise the fabric will handle stiff and clammy, and have an unpleasant odor, which is very objectionable.

The colors in goods improperly scoured, will be dull and lifeless. In fact, the work of other departments will in great measure be brought to naught unless the goods are clean.

In some mills local conditions such as hard water, makes the scouring difficult, while frequently the same difficulty is caused by improper methods of manufacture.

A case has recently been brought to our attention where the mill has for years been troubled with unclean goods. Recently the trouble became worse, and our opinion was asked as to the remedy. The manufacturer wrote as follows:—

"Our goods are wool-dyed meltons and plaid back shirtings, the former weighing from 22 to 28 ozs., and the latter 21 ozs. per 6/4 yard. The stock is 60 per cent. wool and 40 per cent. shoddy; part of the shoddy is used as it is bought, and part is scoured and dyed at our mill. The stock is oiled in the picking room with an oil called ———.

"For fulling, our finisher uses 100 lbs. ———'s fulling soap and 50 lbs. of soda ash, and boils until the mixture strings. It makes a heavy bodied soap, standing at 2½° B., and is used cold.

"For washing we mix 115 lbs. ———'s cotton seed soap and 55 lbs. soda ash. The soap holds up a good body while goods are fulling.

"In scouring we turn on the warm water at 110° F., and let it run to warm the goods thoroughly; then shut water off, let goods drain, close the gates, and a good white lather will come up without using any additional soap. The trouble is in getting the soap out of the goods. We rinse them in warm water 2½ hours, and one hour in cold water. A clean, cold water rinse has no effect whatever in removing soap.

"We have always had this trouble, and some of our finishers have used a 'dope' to kill the smell. With excessive rinsing we can get the goods clean, but spending so much time is not practicable. The loose 21 oz. fabrics are as hard to clean as are the 28 oz. meltons. It is much more difficult to cleanse the goods now in August than it was two months ago.

"The meltons run from 6 to 8 hours, and the skirtings about 2 hours, in fulling." Leslie.

The samples have the clammy handle peculiar to unclean goods, and give out an unpleasant odor, especially when subjected to slight friction. In tracing the cause and applying the remedy for this or any other trouble in the mill, it is necessary for the management to lay aside all prejudice as to what is or is not causing the trouble, and test every reasonable theory that may be presented.

The trouble is of many years' standing, and is worse in August, when the water is low in the streams, than in the spring, when the water is softer and better for scouring. This would indicate that the water might be a contributary cause. Then in regard to the stock used; if the shoddy is carbonized, it may contain a residue of acid which might form insoluble compounds on the fibre, and neutralize the alkali in the soap.

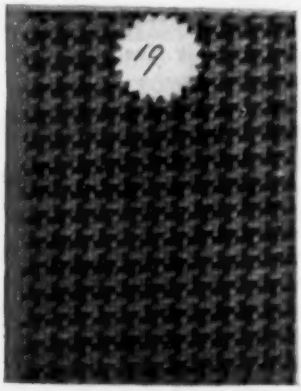
The brand of wool oil mentioned is not familiar to us, and we cannot express an opinion as to its merits or demerits. The name sounds like one of the fancy names attached to mixtures of mineral oil which do not saponify, and often cause just the trouble which this mill is in.

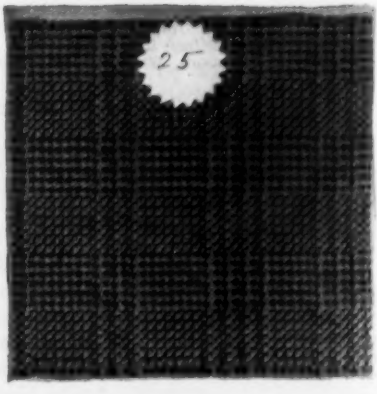
In case of the least doubt as to this oil, it should be discarded for a good grade of easily saponifiable oil. In selecting a wool oil, two objects should be sought; first, the lubrication of the fibre, and second, providing material in the shape of an easily saponifiable oil which will be converted into soap by combining with the alkali used in fulling the goods. Plenty of such oil should be used. It is a mistake to reduce the quantity of oil on the stock, for a good oil not only oils the wool for carding and spinning, making the stock work better and preventing flyings and other waste, but also helps to scour the goods in finishing.

Now we come to the soap. The brand mentioned is made by a reliable firm and has been in use for many years. The writer remembers using it twenty-five years ago, but our correspondent should make sure that it is free from tallow, resin or other substance which might be difficult to remove from the goods.

The soap should approach as near as possible in general character to the oil used on the stock, so that both may aid the scouring process. The strength at which the fulling soap is used is an important point, and while the cause of the trouble may not be here, yet a remedy for it may be found in using a stronger soap. Alkali and soap are especially efficient in the fulling mill for starting the grease in the goods, because of the heat generated by the mill, and the violent friction of the rollers. It would be well to try a few sets of goods with stronger soap of various degrees of strength, and note the results.

Our correspondent says the soap mixture stands at 2½° B. This gives no idea of the proportion of alkali, as he could make a mixture of neutral soap and water stand at 2½° B. or more, although no alkali might be present. He can strengthen the soap only by using more alkali and this can be gauged either by the weight of





soda ash added to the soap, or, what is still better, by dissolving the soda ash in water, keeping this solution at a uniform strength by the hydrometer, and adding so many gallons of this solution to his soap.

If the things we have mentioned have been attended to properly, the actual scouring process will be a simple matter. The less soap that is added to the goods in the washer, the better. In some mills where the conditions are favorable, it is not necessary to use any scouring soap. The soap left on the goods after fulling being sufficient, with plenty of warm water to cleanse the cloth. Plenty of warm water should be used, as it is a great solvent.

There remains the question as to the water itself. If all other expedients fail to give you clean goods, an analysis of the water should be made, and, if anything be found that is likely to cause the difficulty, some method of purification should be used. The finisher should not be held solely responsible for this trouble, as the causes may exist where it is impossible for him to correct them.

Designing Fancy Cassimeres and Worsteds.

ARTICLE III.

FRED BRADBURY.

At Fig. 19 is shown a photograph of a fancy woolen, single cloth for suitings, which, though simple in structure, weave and color, is nevertheless effective in appearance and often finds favor with buyers.

It is made as follows:—

Warp, 2.56s run woolen; 18s reed 2s; 64 inches reed width; 55 inches finished, including lists.

Weft, 2.56s run woolen; 32 picks per inch; weight per 6/4 yard finished, 17 ozs. Weave as given at Fig. 20.

The pattern is as follows:—

Warp:

4 threads black.
4 " white.

Filling:

4 threads black.
4 " slate.

The colors are arranged to suit the design, as shown by the markings below, and at the side of the weave Fig. 20.

In this same weave, but with different pattern and color, a neat effect is obtained in a fancy worsted cloth, shown at Fig. 21.

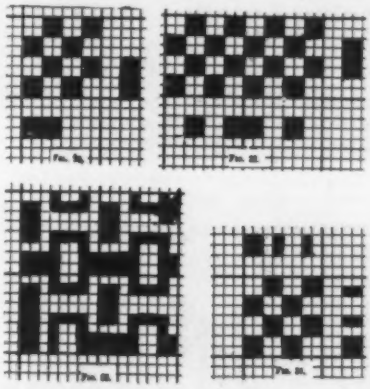
Particulars are:—

Warp, 2/36s worsted; 48 ends per inch in loom; width in reed, 63 inches.

Filling, 2/32s worsted; 42 picks per inch in loom; finished width, 55 inches.

Weight per 6/4 yard 9 ozs.

The colors of warp and weft are arranged to suit the weave plan at Fig. 22 as follows:—



Warp:

2 threads white.
2 " black.
2 " white.
4 " black.
2 " white.
2 " black.
2 " white.

16

Filling:

2 threads white.
4 " black.
2 " white.
2 " black.
4 " white.
2 " black.

16

16 threads in each repeat of pattern.

The effect shown at Fig. 23 may be obtained in the above fabric with weave Fig. 24 and the following pattern:—

Warp and filling:

2 threads black.
1 " white.
1 " black.
2 " white.
1 " black.
1 " white.

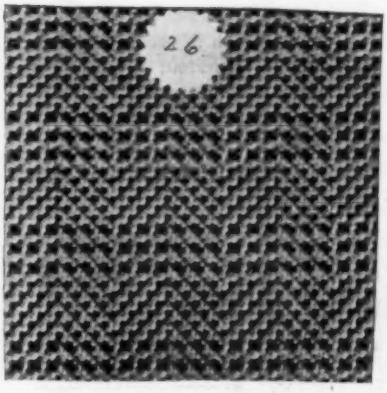
8 threads in each repeat of pattern.

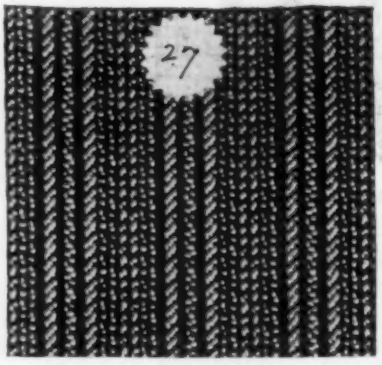
Other color combinations, such as lavender and black, dark brown and

bleached white, or purple and white, are effective in this pattern.

Four styles in heavy fancy worsteds are shown at Figs. 25, 26, 27 and 28.

Each of these is woven with a double weave, the face weave being different in each, whilst the back is woven with a plain weave in each case.





The schemes of coloring for the first three figures are different, whilst that for the last, Fig. 28, is exactly the same as for Fig. 27, the difference in effect being produced entirely by the change in weave.

The lay out, which is the same for all four, is as follows:—

FACE.

Warp: 2/32s worsted; 50 ends per inch; width in reed 65 inches.
Filling: 2/32s worsted; 48 picks per inch.

BACK.

Warp: 2.56 run woolen; 25 ends per inch; width in reed 65 inches.
Filling: 2.56 run woolen; 24 picks per inch.

Finished 57 inches, including lists. Weight per 6/4 yard 21/22 ozs.

The face weave of cloth Fig. 25, is a cassimere twill, Fig. 29, the back weave, Fig. 30, being plain. The double weave is shown at Fig. 31.

Following are the warp and filling patterns, beginning pattern with weave.

Face warp:

4 threads	navy	for 24 threads.
4 "	drab	
2 threads	navy	for 24 threads.
2 "	drab	
48		

Back warp and filling:

2 threads	navy	for 12 threads.
2 "	drab	
1 "	navy	for 12 threads.
1 "	drab	
24		

Face filling:

2 picks	dark green	for 24 picks.
2 "	drab	
1 "	dark green	for 24 picks.
1 "	drab	
48		

This effect is produced by combining two colors in the warp and two other colors in the filling.

The cloth, Fig. 26, is woven with double weave, Fig. 33. The face weave is shown in Fig. 32. Back weave is plain.

Face warp:

2 threads	purple	for 24 threads.
2 "	white	
1 "	purple	for 24 threads.
1 "	white	
48		

Back warp:

2 threads	navy	for 12 threads.
1 "	white	
1 "	navy	for 12 threads.
2 "	white	
24		

Face filling:

4 threads	purple	for 24 threads.
4 "	lavender	
2 "	purple	for 24 threads.
2 "	lavender	
48		

Back filling:

2 threads	purple	}	for 12 threads.
2 "	lavender	}	
1 "	purple	}	for 12 threads.
1 "	lavender	}	

24

For the two trousering styles at Figs. 27 and 28, the face and double weaves are given at Figs. 34 and 35 for the former, and at Figs. 36 and 37 for the latter.

Face warp:

4 threads	black	}	24 threads.
4 "	slate	}	
2 "	black	}	24 threads.
2 "	slate	}	

48

Back warp:

2 threads	black	}	12 threads.
2 "	slate	}	
1 "	black	}	12 threads.
1 "	slate	}	

24

Face and back filling all black.

Though the colors are the same in both, the effects are very different, owing to the change in weave from Fig. 35 to Fig. 37; this shows a method of obtaining variety with the least expense.

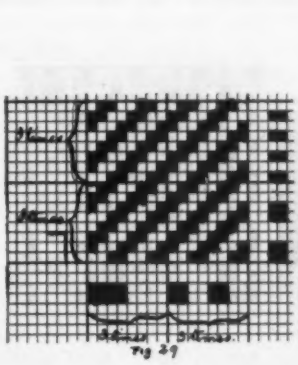


Fig 29

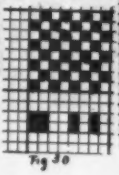


Fig 30

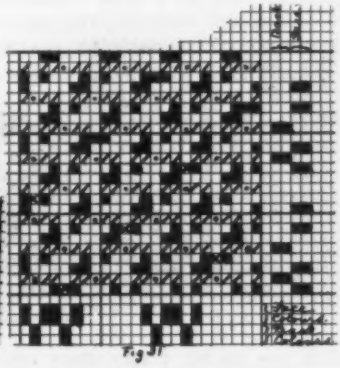


Fig 31

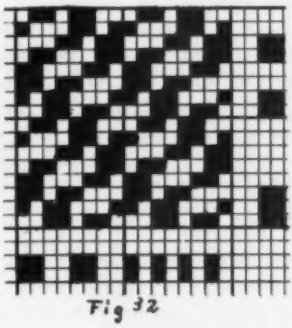


Fig 32

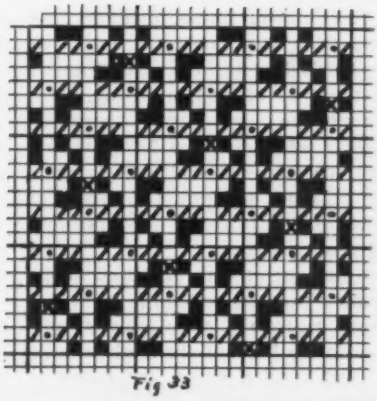


Fig 33

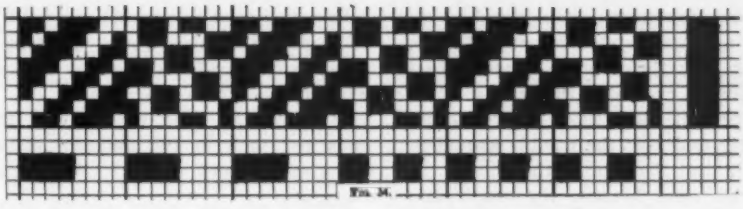


Fig. 34.

—When spots are caused by wax or stearine, the substance should be removed as far as possible mechanically; then spread a blotting paper over the spot and press a hot iron over the paper; the wax or stearine will melt and be absorbed by the paper.

Clay Fabric Construction.

PERCY L. CLAY.

Clay worsteds are a type of cloth which admit practically of no ornamentation so far as weave and coloring are concerned, and whose value, therefore, depend upon qualities which are useful rather than ornamental.

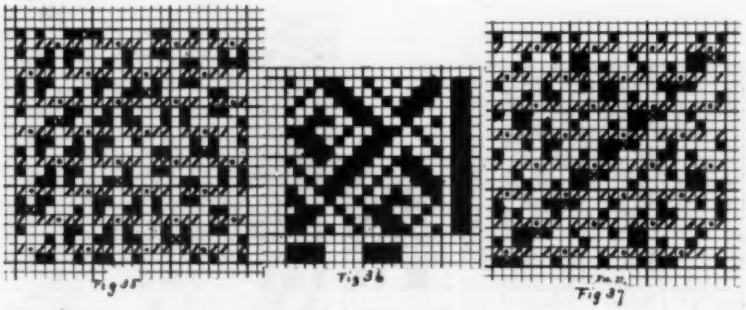


Fig 35 Fig 36 Fig 37

Chief among these qualities are firmness in the hand, and lustre on the finished cloth, but the firmness must not be of such a nature as to prevent the cloth from "hanging" properly when made up for wear, nor must the lustre depend entirely upon any finishing process, the result of which would at best be only transient and unsatisfactory.

No amount of care exercised in the finishing process, or in the choice of dyeing materials, will remedy mistakes in the build of the cloth, or give the best results, unless the fabric is properly constructed.

Manufacturers often wonder why their competitors' goods are more popular than their own. If one were to examine carefully the goods of his successful competitor, he would very likely find that the trouble should not be laid at the door of the finisher, but at his own, because the construction of his cloth is faulty, and consequently nothing possible in the finishing will make his fabric right.

In a typical 15 to 16 oz. Clay worsted, one that is probably the best seller on the market, and one that is as near perfect in structure as possible, there are about 67 ends 2/30 worsted warp, and 64 picks 26 cut merino weft in one square inch of finished cloth.

The warp is a good ⅜ quality, with average number of turns per inch in the twofold, the twist of which opposes the twill in the weave, which runs from left to right. It is hardly necessary to say that if the twill is to show distinctly in the finished cloth, this latter condition is essential.

The weft is a merino, containing about 60 per cent. wool of the same grade as the warp and 40 per cent. cotton, both of which are free from any trace of vegetable matter such as shives, burrs, etc., which would spoil the finished goods both to the touch and the eye. The weave is an ordinary six leaf twill.

Now let us see how nearly the cloth under consideration approximates a fabric of perfect construction, setting the warp 63 inches in the reed, to finish 56 inches full.

In a 20/3 reed this would mean 3780 ends (60×63), which would be practically equal to 67 ends on 56 inches when finished (56×67½=3780).

Is there any good reason why 67 ends per inch in the finished cloth gives satisfactory results? We think there is.

The number of ends in any yarn of average twist, which in the grease would lay side by side in the space of one inch, is found by taking the square root of the yards per pound, and deducting 10 per cent. Applying this rule to 2/30 worsted, which is

equal to 15s single, the answer is 83, or the diameter of each thread is equal to 1/83 of an inch.

We can now apply the rule that in a plain weave there must be, for a cloth of perfect structure, a space between each end about equal to its diameter.

In the six end twill under notice, the weave contains six ends, and two intersections, or 8 units in all, while in six ends in the plain weave there would be twelve units, six ends and six intersections, and the number of ends, therefore, in a six end twill to be as perfect as a plain weave using the same yarn becomes simply a question of proportion. We have seen that the diameter of 2/30 worsted is 1/83 of an inch, so allowing space to equal diameter, 42 ends should be the number of ends of this count in a plain cloth, and proportion for ends in six end twill is : 8 : 12 : : 42 : 63.

Add to 63 say 5 per cent. for waste, and the number of ends is approximately what is required for a perfect cloth, so far as the warp is concerned. The 5 per cent. is added for waste as diameter of yarn was found in grease, and the rule above quoted as to number of ends refers to finished cloth, the diameter of the yarn in which would be somewhat less owing to loss in finishing.

We have previously spoken in this article of the lustre on the finished goods, which is primarily due to perfect construction, and not to any particular process in finishing, which could only be transient.

Can the excess of weft over warp, and consequent disturbance of balance of structure be allowed to exist, and at the same time perfection in another respect, which is of the utmost importance to the lustre and appearance of the finished cloth, be attained? We think it can, and will try to explain as clearly as possible.

If a thread of warp is drawn out of the finished cloth, a distinct waviness will be apparent, and this is due to shrinkage in weaving and finishing, being at a minimum when the piece is stretched light on the beam, and at a maximum after finishing. Upon the character of this waviness or bend in the warp, greatly depends the lustre of the finished article.

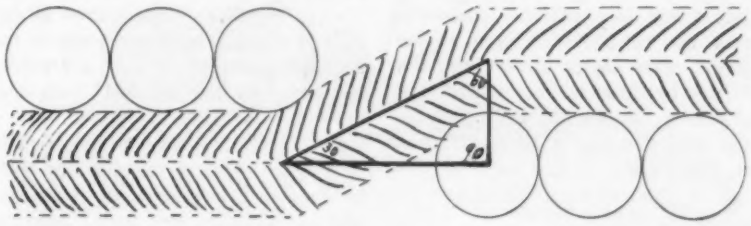


FIG. 1.

Fig. 1 shows a section of the cloth cut through the weft, and will assist in making our meaning clear. It will be noticed that the warp is bent out of the straight line, making a certain angle, with a perpendicular line drawn through the point in the warp where bending takes place, and the centre of the weft. This is an angle of 60°, and undoubtedly gives most excellent results. There are several good reasons why this angle is so satisfactory and suitable, and why it is essential, if the best results, so far as lustre is concerned, are to be obtained; such reasons need not be discussed here, but it may be stated as a matter of fact that in the best types of fabrics this angle of 60° is always found, and the cloth we are considering, which is certainly one of the best of its type, is one more fabric added to this list of perfect cloths in which the angle of 60° is present.

A further examination of Fig. 1 will show that the angle made by the warp thread, as it passes between the

filling ends, is entirely dependent upon the number of picks in the cloth; the less the number of picks, the nearer will the warp approach a straight line; and the greater the number, the more it will be bent out of the straight line; consequently the angle required must be obtained by the number of picks in the cloth.

If this angle is one of 60°, it is a fairly easy matter to find the number of picks required, for it will be noticed that a perpendicular drawn through the warp just at the point of bending and the centre of the weft, forms the altitude of a right angled triangle, with angles of 60°, 30° and 90°, the hypothenuse of which is a line drawn through the centre of the warp, and the base a horizontal line from the centre of the warp at the point of intersection to the centre of the weft.

The altitude of this triangle is easily found, being half the diameter of the warp plus half the diameter of the weft, and as this triangle is just half an equilateral triangle, the hypothenuse must be equal to twice the altitude. We have now only the base to find and this can be done by multiplying the altitude by 1.732.

A reference to the six end twill will show that there are six ends and two intersections in one repeat; therefore the space occupied by one pattern is equal to the base of two triangles, and the diameter of four threads; the triangles representing the point where intersection takes place, and the diameters where the intersection does not occur, and where the space occupied may be equal to the diameter of four picks.

Now let us see how this will work out, and if the result will show that the fabric under consideration approximates angular perfection, or otherwise.

We have explained how to find the diameters of threads previously, and applying this rule the diameter of 26 cut weft, which is taken from yarn in finished cloth, and therefore clean, will be $\sqrt{300} \times 26 - 10\%$, or 79, equal to 1/79 of an inch; and of 2/30 equal to 1/15 worsted warp will be $\sqrt{560} \times 15 - 10\%$, or 83, or 1/83 of an inch, twice the altitude of the triangle.

$1/79 + 1/83 = 2/81$ and $\frac{1}{2}$ of $2/81 = 1/81$ and $1/81 \times 1.732 = 1/46$, or 1/46 is the base of one triangle; but the base of two triangles is required, and the diameters of 4 weft threads, so $1/46 \times 2 = 1/23$ and 1/79 (diameter of 26 cut) $\times 4 = 1/20$ (approximately) and $1/23 + 1/20 = 43/460$, or equal to 10.7 patterns in one inch of cloth, and as there are six ends in each pattern, 6×10.7 or 64.2 picks required in one inch of cloth to bend the warp to the required angle of 60°, or practically the same as the finished cloth contains.

We have pointed out previously that in the cloth in question the weft is somewhat heavier than the warp, and it will be also seen that the threads and picks are not exact, thus disturbing what is known as the perfect balance of structure; but these two imperfections are of relatively small importance compared to the maintenance of the proper angle, so that the finished cloth may have a lustre which is not only pleasing to the eye, but which has the merit of being permanent and lasting, and is due to perfect reflection of light upon the surface of the cloth.

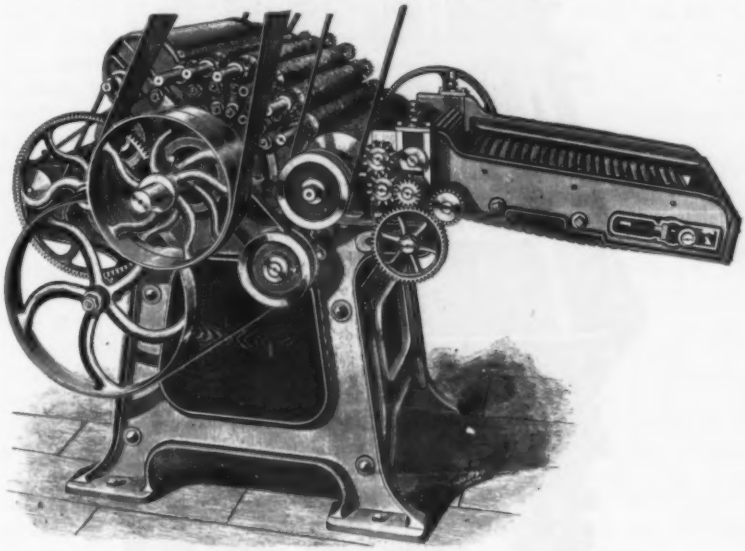
We feel sure that a careful consideration of this article will amply repay any one for the time spent upon it. The same rules may be applied to weft and warp, and the same angle obtained in both, and an absolutely perfect fabric constructed, not only perfect so far as theory is concerned, but actually so in practical results.

Metallic Waste Card.

We illustrate a machine recently put on the market by the well known firm of C. G. Sargent's Sons Graniteville, Mass., and which will interest woolen and worsted manufacturers who have small or medium sized plants.

The superiority of the Garnet ma-

chine for reducing hard waste to fibre stock, is generally acknowledged. But these machines are usually built so large that the power required to operate them together with the cost, has often deterred small mills from the advantage of having their hard waste put in good shape for reworking. This machine will reduce worsted or woolen yarns, waste, soft flannel and knit goods to their original fibre state. They are in fact carding machines, or Garnet machines on a small scale, constructed in compact form and especially adapted for mills which make not more than about one hundred and fifty pounds of waste per day. The cylinders and workers are clothed with strong Garnet wire so adjusted as to work on the twist of the yarn or thread and gradually comb or teasel it out and hold the fibres together. It is claimed that this gradual untwisting preserves the fibres of the wool in nearly their original length of staple. The machine is particularly suited for yarn waste and requires less than two horse power to run it.



C. G. SARGENT & SONS' METALLIC WASTE CARD.

In the profitable working of waste it is advisable not to allow it to accumulate. If it be allowed to remain picked the oil will soon become gummy and will set the twist so firmly that the waste is much harder to comb out, and thus the stock is shortened. On the contrary, if the waste be worked before the oil sets the twist, the natural spring of the wool, which is preserved, assists in opening it out, and the waste or fabric is much more easily reduced to wool again. This point cannot be too carefully noted by parties who work up or desire to work up their own waste. The profit and advantage to a mill in working up, on the premises, the waste made must be obvious.

After the stock passes the feed rolls of this waste card, it is opened out by the licker-in which carries the stock around and passes it to the evener, which further opens and cards it. Both of these two cylinders are stripped by the main cylinder, upon which the stock is gradually teaseled out and carded by the six workers on the upper circumference of said cylinder. These workers are so adjusted that one strips the other, and they are set gradually closer to the main cylinder, as workers are usually set on

carding machines. After the stock has passed the last worker, it is further opened by the fancy, which combs it up from the main cylinder against the points of the teeth of the stripper back of it. From this stripper it is carried to the main cylinder, from which it is combed by the doffer cylinder, and from that it is doffed by the doffer comb. It is a compact, well constructed, perfectly working machine and in the saving and working of stock will pay back its cost in a short time.

The machines are built twenty-four and thirty inches in width, and adapted to be connected together, thereby making a two or three cylinder waste card, at the same time either of the machines can be run separately. Floor space required, 5x5 feet, and 5½x5 feet over all.

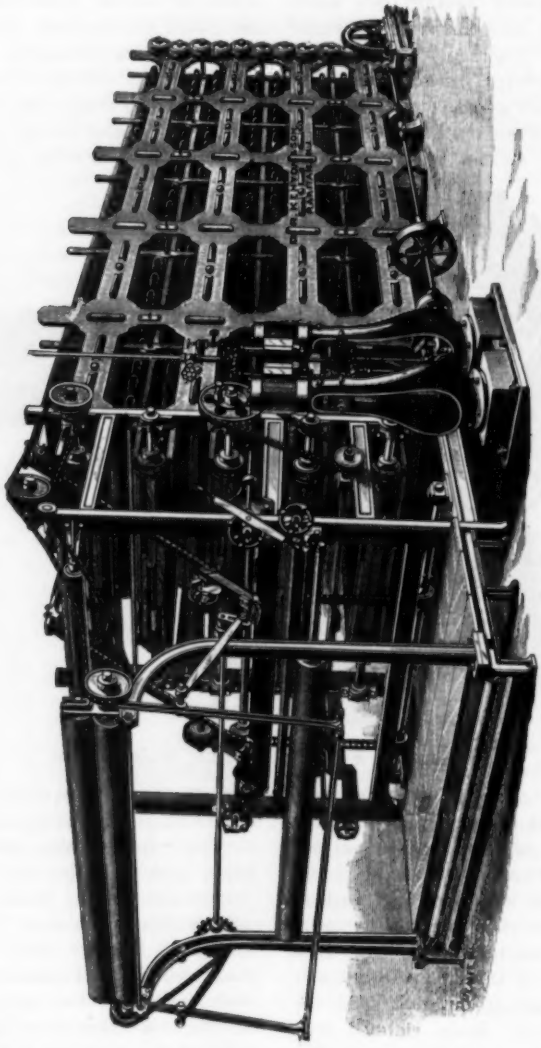


FIG. 1. TENTERING AND DRYING MACHINE.

D. R. Kenyon & Son's Woolen Machinery.

The value of textile machinery to the mill owner depends largely upon

the knowledge and experience of the builder to adapt each machine to the peculiar conditions it is to meet in the mill. The firm of D. R. Kenyon & Son, Raritan, N. J., established in 1843, has for nearly sixty years been building woolen machinery for all grades of goods, and to suit the constantly changing conditions which accompanies progress.

The Tentering and Drying Machine shown in the illustration, Fig. 1, is one of their largest machines built on the pipe system. Cloth must not only be dried, but during that process must be held firmly and securely to insure uniform width of the finished goods. Many manufacturers know to their sorrow the damage that an inferior cloth dryer can cause such as dryer marks, often necessitating refinishing of the goods, uneven width resulting from imperfect means of holding the selvage, and partial drying caused by lack of heating surface, besides the high labor cost which inferior machines entail.

The Kenyon dryer is of heavy, substantial construction throughout. Particular attention has been paid to making the chain durable, and the pins are held in plates which can be replaced whenever necessary. This renders it possible to keep this important part of the machine in good order at all times.

The machine allows a very large heating surface in proportion to the cloth surface exposed. This enables a high temperature, sufficient even for carbonizing heavy friezes, to be maintained, while for ordinary drying there is a surplus of heating capacity which is not used unless required, the temperature being regulated by the steam admitted to the coils.

The arrangement of the feed enables the operator to stand on the floor where the air is cooler and the cloth is carried by an inclined portion of the chain to the upper part of the dryer; as it goes on the chain the selvage is pressed down on the pins by stiff bristle brushes.

The cloth, as it comes from the dryer, passes under the platform on which the operative stands, and then passes to the folder where it is folded ready for the next process. This folder can be placed at a distance from the dryer, in another story if required, and the goods delivered near the next operator who is to work on them.

This dryer is made in various lengths and widths. The width is adjustable to suit different fabrics, and is regulated by right and left hand screws. The height varies from six to ten feet. It is driven by double vertical engines, or can be connected with the mill power when speed is regulated by cone pulleys.

The Messrs. Kenyon build a double layer hot air tentering and drying machine. The drying is effected by forcing hot air into the enclosed space between the upper and lower layers of cloth. The goods can be dried at any desired width, and if necessary, stretched lengthways. The face of the goods does not come in contact with either drums or plates, which is a great advantage on goods where it is necessary to keep the nap or pile undisturbed. For goods that require whipping, a whipping machine can be attached to this dryer and both operations carried on together.

This dryer is built any desired length, and width, either one, two or three sections, the two section machine having four layers, and the three section, having six layers of cloth exposed. The height of these dryers is 4, 7, and 9 feet respectively. Heaters and blowers are furnished of various sizes to suit capacity of machine.

The Dryer chains are made by special machinery, and Messrs. Kenyon & Son can furnish chains promptly for their own as well as foreign built dryers, also gill plates for all kinds of drying and tentering machines. The Kenyon drying machinery is in use in many of the leading mills of the United States. They are to be found in every textile manu-

facturing district where convincing testimony as to their merits can be obtained from the users.

In addition to drying machinery, this firm have for years built fulling mills of various types; cloth washers; soaping machines; piece dyeing machines; dye jiggers; chinchilla and Whitney machines; dewing or spraying machines; wringers to take the place of hydro-extractors; friction clutches; all of which have gained an enviable reputation.

Card Clothing for French Worsted Cards.

Speaking of card clothing on French worsted cards, J. Renel says that India-rubber, which has been used to good advantage in France for card clothing of cotton cards, could not be used on the worsted cards, owing to the high temperature maintained in worsted mills, which softened the rubber, and the extremes of moisture and cold, which causes the rubber to shrink and harden again. The oil used on the wool had also an injurious effect on the rubber clothing.

The vulcanization of the rubber served in great measure to remove these difficulties. It happened frequently, however, that an excess of sulphur in the vulcanized rubber caused the wire to rust.

In 1853, a Belgian, M. Martin, patented a process by which cotton cloth was used for a foundation, and this was covered with a thick woolen felt. This served to support the wire between the foundation and the hook of the tooth. The clothing was then flocked, that is, a mixture of equal weights of oil and flocks was forced into the clothing, first by hand, and then by a stiff brush; but this covering caused much trouble by getting out of place, and requiring frequent repairs. In consequence, the 6 or 7 ply cotton fabric has displaced this method to a great extent.

Leather is still employed for the bur cylinders and strippers when a triangular wire is needed, and which is supported better by the leather.

Many carders prefer leather on the fancies, because the wire is held more firmly at the base, which gives more elasticity. Nevertheless, a 3 or 4 ply rubber fabric, covered with a thin wool felt, is often used with success; this costs less and is perfectly homogeneous from one end to the other, while the leather has its soft and hard spots, which causes the wool to be raised unevenly from the cylinder.

Sheets are still used for the fancies by some worsted manufacturers in Verviers, Belgium. It is claimed that the wire in the sheet moves perpendicularly to the axis of the cylinder, while on the filleting the wire works obliquely and draws the wool to one side, and has a tendency to draw the filleting itself out of shape; it is also claimed that at each sheet the teeth have more energy than has the continuous filleting; and, the sheets remove more of the seeds and other vegetable matter in the wool.

—A law was passed by the Massachusetts General Court in 1656, making spinning and weaving compulsory. It provided that the selectmen of each town should assess every family for one or more spinners, or for a fractional part, "that every one so assessed do after this present year, 1656, spin for thirty weeks each year, a pound per week of lining, cotton or wooling, under the penalty of 12d. for every pound short."

Oiling Stock for Carding and Spinning.

The operation of applying oil to stock which is to be carded and spun, if done by hand, is a disagreeable operation to the operative and attended with more or less waste of oil, and difficulty in securing a uniform distribution throughout the batch. It is not possible to dipense with oil, as the dry stock spins badly, if indeed it can be spun at all.

Manufacturers often seek to economize by either reducing the quantity or quality of the wool oil, but generally such experiments are attended

with failure. Any reduction of oil below what it should be in order to properly lubricate the wool results in increased flyings and waste in the card room, and in causing the stock to work badly in both rooms, causing imperfect yarn, decreased production, and inferior cloth; and, any experiment in the way of reducing the quality of the oil is frequently attended with far more serious consequences.

The oil is applied to the wool for a temporary purpose only, viz., to facilitate the operations of carding and spinning. After these processes are completed and the yarn has been converted into cloth ready for finishing, all of the oil in the goods must, in nearly every textile fabric, be first removed before the goods are ready for the market. There are a few fabrics, such as Kentucky jeans and a certain grade of woolen hosiery in which it is customary to finish without scouring, and, consequently, with the oil in the goods.

A cheaper and inferior oil generally means an oil difficult to saponify and remove from the fabric. Many of the difficulties which mills experience in getting their goods clean, are the results of using inferior wool oils, but a good oil, if used on the stock, instead of making the cleansing of the goods difficult, facilitates that operation by combining with the alkali in the goods, and forming soap, which, being thoroughly incorporated in the fabric, is a very efficient agency in the cleansing process. So, it may be laid down as an axiom in woolen manufacturing, that nothing but the best oil should be used for oiling stock.

The application of the oil is, as we have stated, a disagreeable process, and improved methods of doing this work have been invented from time to time. The different methods which have been employed exhibit, perhaps as clearly as any other process in the mill, the advance which has been made in the art of woolen manufacture.

An interesting reference to the early methods of picking, oiling and carding of wool is found in an advertisement which appeared in the Pittsfield Sun, as follows:

"Pittsfield Factory, April, 1805.

"Good news for farmers! Only eight cents per pound for picking, greasing and carding wool, and 12½ cents for mixed. For sale: Double carding machines upon a new and improved plan, and cheap; also, a few sets of cards made by the Shakers (evidently hand cards), and warranted good.

"Arthur Schofield."

In those early times, the oiling of the wool was often done by the farmer himself before taking it to the mill. He would pick up any, or all kinds of grease about the house, melt it and pour it onto his little jag of wool, and when he delivered it to the mill would notify them that it had his own grease, thus saving a small amount of price usually charged for carding the wool into rolls. The oil is generally applied by means of a sprinkling pot.

In large rooms, where many thousand pounds of stock are put through the pickers every hour, large quantities of oil and water must be mixed, and this work, combined with measuring it and carrying it to the batches, involves considerable labor. In such cases, it is found advantageous to mix the oil and water in a large tank. From this tank the mixture can be forced by a small centrifugal pump, through pipes, to the place where the batch is being mixed. The picker man then, by turning a valve, can fill his pail or sprinkling pot, near the place where he is spreading the batch, and by running a pipe from the pump to the top of the tank, the mixture can be kept in a constant state of agitation, preventing any possible separation of the oil and water, and insuring its uniformity.

Thin layers of the stock are spread over the floor, and the picker man sprinkles each layer with what he considers the proper amount of oil, and then, taking a pole eight or ten feet long in his hands, proceeds to

pound the wool, and by a twist which he gives the pole as it strikes the batch, turns the top of the layer which had received the oil down into the batch and serves to more thoroughly spread the oil throughout the stock. There is quite a knack in giving this twist to the pole, and a painstaking picker man would contribute much to the success of the carding and spinning operations by paying attention to this point, but as it required considerable effort and strong arms, it was very liable, especially in the case of careless and indifferent workmen, to be slighted. After one layer has been oiled and shaken up, another is applied and the same operations gone through with, until the batch is completed.

The total amount of oil for the whole batch is measured out carefully, but the amount applied to each layer must of necessity be left to the judgment of the operative, and consequently, one portion of the batch may receive more or less than its proper share of the oil. This variation is to a great extent remedied in the subsequent operation of picking, but frequently the carder notices that one part of the batch has more oil than the rest.

While wool oil facilitates carding and spinning, it is also true that the addition of water to some kinds of wool aids in these processes, and so it has been the practice to mix the oil with a small proportion of water, sometimes as high as three parts of water being used to one part of oil. The objection to this is that the water evaporates rapidly, and as this evaporation does not proceed in a uniform manner throughout the batch, it causes a great deal of trouble in the card room. When starting a new batch which has been recently oiled, the stock will contain much more moisture and spin and card better than it will in a few days, when a part of the water has evaporated, and sometimes, especially if the batch is large, the last part of it to be carded will contain no moisture. This variation is a very serious matter, and causes uneven yarn and bad spinning.

To obviate this difficulty, a device was invented for applying the oil as it was fed into the card. It consisted of an oil tank placed above the first breaker feed apron, and extending across the width of the apron. A revolving shaft was placed above this tank, and this shaft had three or four jointed arms, at the end of which a rod was passed. This arrangement was so made that when the shaft revolved it would immerse this rod in the oil and then bring it up slowly out of the liquid, and more or less of the composition would adhere to it. As the rod revolved and passed the centre of gravity, it was so arranged that its weight would cause it to fall, and a stop was provided, so that when the rod struck the stop the particles of oil adhering to it would be shaken down onto the stock. When the shaft passed round, it again caused this operation to be repeated, and the amount of oil could be partially regulated by the speed at which the shaft was run. This amount varied somewhat, according to the quantity of liquid in the tanks, and as it was impossible to keep the amount of oil in the tanks exactly at the same level at all times, the variation would cause corresponding difficulty in the carding and spinning.

Another objection to this process was that the oil fell upon the top of the stock on the feed apron, and while a device was provided to beat the oil into the stock, it did not answer its purpose very well, and, consequently, a portion of the stock would be dry when entering the card, while other portions would have all of the oil. The consequence would be that some of the stock would pass through the second breaker before receiving its proper share of lubrication.

Many of the objections to this method are obviated by placing the oiler on the picker instead of on the card, and during late years an oiler has been patented and placed on the market for automatically oiling the stock at the picker. This machine,

called the Spencer Automatic Stock Oiling Machine, sold by Geo. S. Harwood & Son, 53 State Street, Boston, Mass., has now been in use long enough to test its merits, and the users of the device speak very favorably as to its work.

The principle of the machine is simple, consisting of a revolving brush on which the oil is dropped by a vibrating pipe which leads from a tank placed over the picker. The brush striking against a metal blade converts the oil into a spray which is thrown on the wool. Being in the form of a spray instead of in drops or solid stream, the composition penetrates the stock and reaches the individual fibre very effectively. The oil or composition required for the batch is placed in a lower tank and pumped to the upper one, which is provided with an overflow to the lower tank. This keeps the liquid in constant agitation, preventing any separation of the oil and water, and the liquid in upper tank is maintained at uniform level. The flow of oil can be closely regulated. A gauge at lower tank shows how much oil remains to be applied.

The evaporation of the water after the stock is picked, and while held in storage waiting to be carded, can be prevented in great measure by keeping the stock packed closely in tight bins.

Hopkins 1900 Universal Fulling Mill.

The new fulling mill made by the Hopkins Machine Works, Bridgeton, R. I., possesses features which will commend it to every manufacturer who is acquainted with the difficulties incident to fulling.

The main rolls are covered with either endwood, rubber, copper or composition, as purchaser may desire. Heavy bronze flanges are on the lower roll. The friction driving pulley is simple and durable, and has a powerful grip which ensures it against slipping when subjected to the strain of fulling heavy goods.

The traps or shrinking boxes are made of ash or maple, and fastened securely to the iron frame of the mill. The corrugated throat plate shown in vertical section of trap, Fig. 1, combined with the flaring or bell-shaped sides, shown in horizontal section Fig. 2, prevent the cloth from being

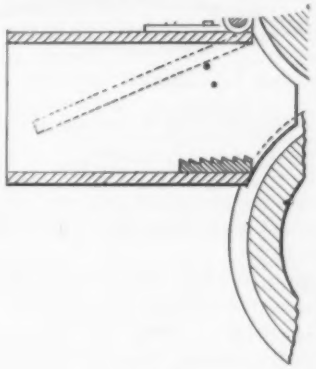


FIG. 1.

crowded back and damaged by chafing or cutting, or nipped between trap and roll.

Sufficient space is left between trap and roll to prevent damage in case goods are accidentally drawn into this space. The builders claim it is prac-

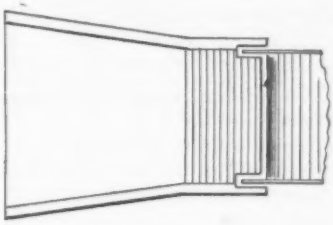


FIG. 2.

tically impossible to nip or tear the goods in this trap.

Most great improvements to machinery are so simple as to excite the remark, "Why did not some one think of that before?" This can certainly be said of the Hopkins guide roll, which is shown in Fig. 3.

One of the great difficulties in fulling has been the liability of the goods to run through the rolls in the same folds, thus causing mill wrinkles, a

defect in goods which admits of no cure. Ever since rotary fulling mills have been operated, it has been the practice, particularly with hard fulled goods, to take them out from time to time during the fulling operation, and unfold them so that when again

FIG. 3.

started they would run in different folds.

This expedient consumed time, cooled the goods and retarded the fulling and even then was only partially effective.

Many devices have been tried to change the folds while mill was running, most of them ineffective. The Hopkins guide roll which was patented in 1899, is simply a wooden roll bevelled so as to be larger in the centre. The cloth as it passes over this roll is carried to the high part of the roll, and in its endeavor to remain there is kept in constant vibration from one side to the other, which serves to change the folds. It is claimed that this prevents all roping or twisting.

The improved stretcher consists of a round or oval metal or porcelain guide fastened in a framework, and connected with a suitable device on the outside of the mill, shown at Fig. 4. by which the position of the guide can be changed as desired, thus increasing or diminishing the tension on the goods. An important feature of this

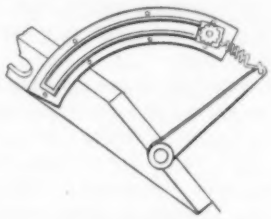


FIG. 4.

stretcher is the spiral spring shown in Fig. 4, which causes the guide to yield slightly when seams or bunches pass through, thus relieving the goods of many sudden strains.

The stop motion of this mill, shown in Fig. 5, is of very simple form, has no weights or springs, and is positive in its action.

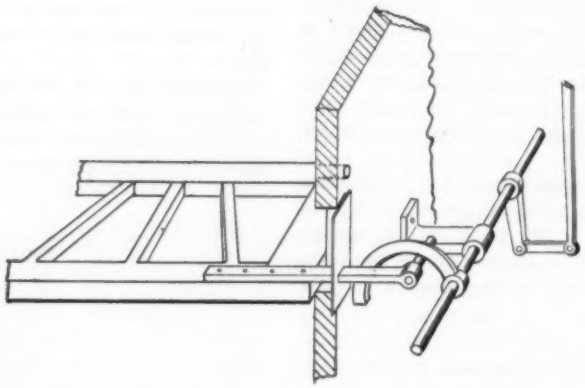


FIG. 5.

The mill is very strongly constructed and stands firmly on the floor, owing to its having six floor bearings.

All hinges, handles, knobs, buttons, etc., are made of bronze or brass, and will not rust.

They are built in two sizes. One, called the "Universal Mill," handles two pieces of 6/4 heavy goods on a corresponding number of light weights. The other, called the "Extra Universal Mill," has a capacity equal to four pieces of 6/4 heavy goods.

COTTON DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

American Cotton Spinning Machinery.

ARTICLE XV.—THE COMB.

CHARLES CLIFTON HEDRICK.

(Copyright.)

After the laps have been formed upon the sliver lap machine or the ribbon lapper, they are taken to the comb upon which the actual operation of combing is carried on. The comb is divided into either six or eight heads or sections, a six-headed comb being most generally used.

Each head is exactly like the others, so that a description of the movements of one answers for all, and it should be understood that, although the functions of one part depend closely upon those of another, each movement will be considered a separate action.

Figure 95 is a section through the comb, showing enough of the principal parts to enable one to understand its workings.

The lap is placed upon the fluted lap rolls, A and A, by which it is slowly unwound. The cotton passes down a smooth plate, B, and is drawn between the feed rolls, C and C. The movement of these rolls is intermittent and is governed by the length of the staple of the cotton being worked, and the draft of the machine.

From the feed rolls, the lap passes down between the cushion plate D and the nipper E', which, at this particular instant are apart to allow it to pass through

When the length has been delivered by the feed rolls, their movements cease and the nipper is brought into contact with the cushion plate, and the cotton, which is between them, is held firmly.

Just beneath the cushion plate, is the cylinder shaft N, upon which are the cylinders, one for each section. The cylinders are made up of two parts, the fluted segment O and the half lap P, which are separated by a portion, which is smaller in diameter.

The surface of the fluted segment is similar to a feed roll, while the half lap is composed of a series of rows of needles, each row finer than the preceding one. The rotary motion of the cylinders, unlike that of the feed rolls, is continuous, and, as it revolves, the needles pass through that portion of the lap, which projects downward from between the nipper and the cushion plate, and removes the short fibres and neps.

Front of the nippers are the detaching rolls E, F and G. E is a steel, fluted roll which is driven from one end of the comb. F is a brass, fluted top roll driven by contact with E, and G is a leather covered roll, heavily weighted, also driven by contact with E.

All these rolls have a rotary motion both forward and backward, while F and G have, in addition, a slight movement circumferentially about E.

The functions of these three rolls, in connection with the fluted segment, are to detach the fibres which have just been combed, from the mass, held between the cushion plate and the nipper, and to attach them to those which were combed previously, so as to make a continuous sliver.

After the needles have passed through the cotton, the rolls E, F and G turn backwards a portion of a revolution so that the cotton, which is between them, will be in a position to be attached or pieced up. Meanwhile the partial revolution of the cylinder, has brought the front edge of the

fluted segment around against the combed fibres, which are hanging from between the cushion plate and the nipper, and as it continues to turn, they are made to lay upon its surface.

At this point, the detaching rolls, which have ceased their backward movement, now turn forward and the leather roll G, which during its backward movement was clear of the cylinder, is moved circumferentially about the steel roll E, until it comes in contact with the fluted segment. When these surfaces touch, the fibres are carried forward and are overlapped on the end of those ahead, and, as the forward movement of these rolls is considerably more than the backward, the fibres are drawn steadily onward.

At the same time that the rolls commence to turn forward, the top comb, H' descends into the path of the cotton, and the end of the fibres, which were between the cushion plate and the nipper, also receives a combing.

From the detaching rolls, the sliver is drawn forward through the trumpet L, by the calender rolls M and M', and is carried with the other slivers along the table, where they pass through a draw box, that usually has a draft of five. From here they pass as one sliver, through the coiler, into a roving can.

The short fibres and neps are removed from the cylinder teeth by a revolving brush Q, which is placed beneath the cylinder. The surface speed of the brush is slightly greater than that of the cylinder, and as the bristles extend about one-eighth of an inch below the points of the needles, these are thoroughly cleaned.

The fibres are removed from the brush by a slowly revolving doffer R, which is covered with very coarse card clothing, and they are removed from the doffer, in a thin fleece, by an

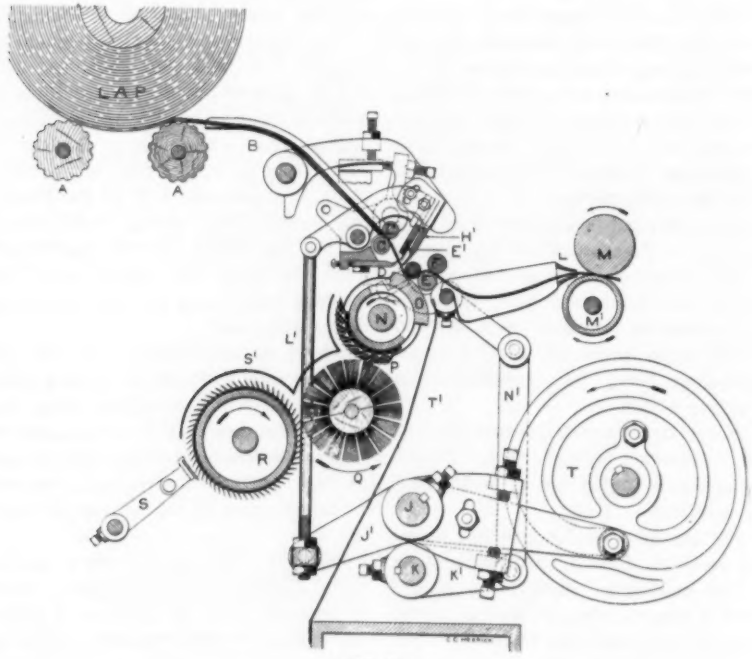


FIG. 95

ordinary doffer comb S, the cotton falling into a box below.

On each side of the cylinder and brush are covers S′ and T′ which prevent the fly from escaping. The brush is adjustable, as the continual wear shortens the bristles very rapidly. The doffer and the doffer comb are adjustable to the brush.

Prevention of Double Yarn on Ring Frames.

How to best prevent double yarn on ring spinning frames, has bothered nearly every superintendent and overseer of ring spinning. This trouble from double yarn is far more general in rooms filled with double boss rolls; on the single thread roll there is very little double yarn made as a rule.

To reduce double yarn to a minimum, it is absolutely necessary that good, well made clearers suitably covered, be used, for with poor clearers no matter how well the spinning runs there is bound to be more or less double yarn all the time.

After clearers have been in use some time the corners at each end wear down; when they get into this condition, they are the cause of a considerable amount of double and bunchy yarn, because, when the yarn at either end of the clearer breaks down, the cotton, after winding around the clearer for a short time, is forced down, owing to the tapering surface upon which it is winding, on to the pin on which the clearer runs.

A very small amount of cotton wound on the pin, stops the clearer, with the result that the untwisted yarn almost invariably laps on the leather or steel roll, or catches on the next end, thus making a piece of double yarn.

The build of the frame has a large influence on the amount of double yarn made. On frames where the angle of the roller stands is very acute, and the horizontal distance of the bight of the steel roll from the thread guide is small, it is impossible to spin yarn as free from double places as is possible on frames in which the steel roller is set further back from the guide wire. This is so because when an end breaks on a frame in which the steel roll is set close to the guide wires the untwisted yarn is more apt to be delivered loosely into the air, when it is more than likely to blow on to the nearest end, and cause double yarn, than to fall on to the clearer and be safely wound up out of Harm's way.

This trouble is far more frequent on high speed frames; with a steel roll running at a comparatively slow speed the end catches on the clearer with far greater certainty.

There are three different makes of ring frames in my spinning room, which I will call A, B and C; on A the horizontal distance from steel roll to thread guide is two inches (2″); on B, three and three-quarter inches (3¾″); on C, three inches (3″).

On frame A, which it will be noted has the shortest horizontal distance, there is far and away more trouble from double yarn and lapped rollers than on the other types of frames. In cases of this kind there is no way to absolutely prevent double yarn, because it is impossible to change the location and angle of the steel rollers; nor is it advisable, as a rule, to try and help matters by setting the clearers further forward—where the clearers are hung on springs, this, as a rule, is possible—in order to make them catch the yarn with greater surety, because if this is done there will probably be too little space between the surface of the clearer and the path of the yarn to make good piecings easy when there is a crow lap of any size on the clearer.

Currents of air coming, perhaps from open windows, perhaps from open doors, and sometimes from belts, cause a good deal of double yarn, as very frequently when an end breaks down, the air current carries the light untwisted yarn on to the next end before it has time to fall on the clearer

and be taken care of in the proper way.

It is not always advisable to keep windows and doors closed when they are causing a draft, because in many ring rooms the heat is so intense on a warm day that one is forced to try and keep the room as cool as possible for the sake of the help. However, by keeping the matter in mind, a careful overseer can avoid much double yarn being made from this source.

In dry, cold weather, when electricity is troublesome, the frame belts sometimes cause double yarn, as the electricity they generate has at times a considerable effect on the yarn at the end of the frames next the belt. The only remedy for double yarn from this cause, is to keep the belts in as good driving condition as possible, so that the slipping will be reduced to a minimum, and especially to have in the room, and use, suitable means of humidifying and warming the air.

Speaking broadly on the prevention of double yarn, it is well to say that suitable stock for the counts being spun, and first-class carding, so that good spinning is possible, are wonderful preventatives of double yarn. Then again the power to regulate the humidity and temperature of the room, means a great deal, as it assists so very materially at times in making the work run well, when if there is no way of moistening the air, the work all over the room, in extreme cases, may be "busted flat."

Very frequently in my own experience, the work has been running all right at stopping time and during the night or on Sunday a dry westerly wind would come up and blow pretty fresh; result, the work running very badly when started up. In the ordinary equipped room at such times all that can be done is to set the steam vapor pots going, and wet down the floor of the room thoroughly with a sprinkling can, repeating the sprinkling as the floor dries. Under these conditions it takes a considerable time, especially in a high studded, lofty room, to affect the air of the room sufficiently to help the running of the work much, consequently you are sure to have more or less double yarn on account of some of the work being bunged up.

Again, the way in which the room is run has a very important bearing on the amount of double yarn made. In a well managed room there is a good practical system of looking after the cleaning and general care of the frames, and the help are subject to sufficient discipline to ensure their being kept at their work. It is never an easy matter, and in some cases it is almost impossible to preserve good discipline in a room run so largely by irresponsible, poorly paid help as a ring spinning room is, but unless good discipline is maintained, it is impossible to spin good yarn, and reduce double yarn to the smallest possible amount.

DOUBLE YARN.

Uneven Cloth.

In many of our mills today there is much uneven or shady cloth. I have special reference to fancy cottons with three or four shuttles, and to heavy, fancy woolens. When the goods are cop dyed, there is considerable trouble with the shades, much of which is traceable to the outside of the cop absorbing more of the dye than the inside. Many methods have been tried in cop dyeing to overcome this obstacle, such as the use of hollow, perforated skewers, with the object of allowing the dye to flow to the inside coils, pressure being applied to force the dye through the cop. But this does not give a satisfactory result, hence the employment of long-chain dyeing and the quilling machine.

But when the dyeing takes place in the raw stock and the filling is spun on a ring frame or mule, it might be expected that all fear of uneven shades would be removed; but a difference in shade often appears in the goods dyed

in the raw stock. On ring frame filling there is a double tendency to show difference in shade, for difference in twist will show a proportionate difference in shade every time, both in cotton and woolen; and as the twist in ring-spun yarn is proportionate to the speed of the spindle, minus the revolutions of traveler round the ring, we have more twist in the yarn on the outer coils of the bobbin than on the inside. Then when the yarn is being wound in direct contact with the bare bobbin, it has a flatter appearance; this also has a tendency to cause a different shade in the cloth.

Bobbins of unequal diameter may cause a slight difference in twist. A variation in the cams of different machines may cause the yarn to unwind from some bobbins much easier than from others. This variation makes the selvage slack or tight, and no fixing of the shuttle tension will make bobbins from different frames weave alike on the same loom with the same shuttle tension.

Then there is the effect of the yarn unwinding more easily from the top of the cop or bobbin than from the bottom. Friction of the rapidly moving yarn around the empty bobbin or spindle certainly causes more tension. "Oh," some one may remark, "We admit all these things are true in theory, but in practice they are so infinitesimally small, they deserve no attention." But listen; I know of a mill that is suffering considerably just now with uneven shades and weights. For, added to the imperfections already mentioned, there is that persistent practice by weavers, of putting in four full shuttles at once, that they, the weavers, may chase and chin round the shop. This is on woolen heavy weights, and what can any one expect but uneven cloth when the goods come to the shears or gigs? Is it possible for any loom fixer, under such conditions, to adjust shuttle tensions so that a thick, tapering place will not show in the cloth? How can this help showing up in uneven shades? Some one may say, "Where is the overseer, second hand, or even super?" Don't you know that all the overseers are not dead yet who "know it all?" To tell them of the difficulty would be "casting pearls before swine." Don't you know, too, that all the overseers are not yet extinct, who let their favorites run them, and that a new super cannot see and rectify all these things in a day or a week, when they have gone on for years?

In the cotton card room great vigilance must be used to prevent the drawing tenders putting in full cans at once, and to make sure the cans are put in in sections, there must be no let up in the vigilance. It is absolutely imperative that every overseer, super, or agent must aim much higher than he expects to reach, otherwise his name will soon be "Dennis."

PAUL.

Japanese to Study Our Methods.

Three prominent Japanese have recently arrived here to study the commercial conditions in this country.

One of their number, S. Iwamura, represents the Kioto Chamber of Commerce and has also been commissioned by the Japanese government to study the methods of commercial education in other countries.

His associate, Y. Fujimura, is one of the proprietors of a Japanese cotton mill, employing 2400 hands, and previous to its organization six years ago, experts were sent to Europe and America to study the situation and report.

Plenty of skilled help can be obtained in Japan, where there are technical colleges which have long been established, and are instructing the Japanese in the textile as well as other arts. His is a joint stock company with five directors. Each of these become president by rotation. A wide variety of goods is made, varying from the cheapest sheeting to high grade prints.

Interest rates are high in Japan at

present, being about 7½ per cent. Wages averaged 25 cents per day. Goods were paid for by 60 day notes, no discount being allowed for cash. No traveling salesmen are employed; the sales are made by resident agents who receive 2 per cent. commission and stand all losses from bad debts.

Competition is sharp and there has been talk of forming a trust or combine of the Japanese mills.

No protective duties are found necessary in Japan, as cheap labor gives the home mills command of the home market. This visit of investigation is in line with the policy pursued by the Japanese to take advantage of the methods of manufacturing which have been tested in other countries.

During the past year many Japanese have called at the office of the Textile World. They have exhibited a great desire for information which might aid their textile industries at home, and all have shown themselves well posted as to machinery and processes of manufacture.

Notes on Slashing.

The proper regulation of the steam is a very important point in the running of slashers. A good regulator valve consists of a lever and small weight, by which the pressure can be adjusted at any point desired. When sizing light weights or fine counts, it will be found that ten pounds of steam is all the pressure required. If a higher pressure is maintained on the cylinder in running such work, the yarn will dry so quickly as to adhere to the cylinder, making the thread rough, as well as causing tie-backs. No more steam should be used than is sufficient to dry the yarn. This will be found to vary from two to five pounds for fine counts and light sheetings, and from five to ten pounds on heavy and coarse work. This is the result of observations on work varying from No. 5's to 120's, and from 300 to 8000 ends on both white and colored work.

The slasher should be provided with steam traps, worked by a ball lever float, to carry off the condensed water. The buckets which are placed in the cylinders to carry off the water are frequently much too small for the purpose. They should be made so as to run clear across the cylinder, and carry off the water as fast as it condenses. The heavier the work, the more size will be required, and, consequently, the more steam will be condensed, and in such cases the larger buckets are essential. If the water is allowed to accumulate, the drying power of the cylinder is reduced, no matter how much steam pressure is present.

Too little attention is paid to the spooling, warping, and slashing, in our cotton mills. They are very important departments, and on them depend, in a great measure, the production of smooth and perfect cloth. Each slasher tender should be provided with a separate kettle for size, as very often a variation in the work on different machines necessitates the use of a different size. Frequently two slashers will be running side by side, one of them on work which is to take 60 picks, while the other is to be woven with 200 picks. The size on the 200-pick warp must, of a necessity, be heavier. For such work, 75 pounds of starch to 100 gallons of water would not be any too heavy. If size stands over night in the kettle or size box, it should be thickened in the morning. This will avoid the difficulty which is often to be found in the first warps that are beamed in the morning being soft and difficult to weave.

The size in the size box on the slasher should be kept boiling all the time that the slasher is in motion, as the hotter your size is, the better it penetrates the yarn. This is a great advantage which the slasher has over the dresser. When sizing Egyptian cotton, or warps for heavy weaves add one cup of spirits of turpentine, or a small piece of blue vitriol to each batch of size. This will cause the size to penetrate the yarn better.

SLASHER.

KNITTING DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

The Knit Goods Situation.

One fact confronts the knit goods observer at every turn—liberal stocks. There is no such thing as overlooking the long lines of goods on the shelves, no matter how strong certain raw materials may be, or how steady yarn quotations run.

There is, however, no necessity for despondency. In the end, the conservatism which these plentiful stocks inspire will be for the best.

In the hosiery line it is clear enough that imported goods will occupy the strongest position. But their place is by no means as impregnable as is generally represented. Reckless statements are now going the rounds, such as that the low prices of two years since will never be repeated, owing to the great transfer of labor from knit goods to other industries. While the return current has not yet set in, there are indications that the turn in the tide has been reached.

Chemnitz manufacturers are sold from four to six months ahead. The conditions there in all directions are materially unchanged, and recent experiences are likely to be repeated for some time to come. Spinners are still confident, the status of raw materials and labor favoring them.

Domestic lines, however, will not be eclipsed by imported goods. Domestic seamless manufacturers are making steady advance, and their latest productions are as great a revelation in fabric, design and dye as they are in price. They ought to hold the market on goods below $2.40 a dozen.

Fancies may be bought with entire freedom, as they are gaining new impetus daily. It looks as if their turning point is not likely to be overtaken for a year, at least. The endless combinations that can be got by means of lace and embroidery effects have done more to extend the call for fancies than any other one element.

Spring orders are scarce and caution renders it imperative that specialties should be carefully cultivated. In short, the consuming capacity of the country has been outstripped the past two years by the increase in machinery. The immensity of such increase has not yet been realized, and it will take a year or two for the trade to sense such statistics.

Cashmere, worsted and merino hosiery still offer plenty of possibilities in the way of specialty developments, notwithstanding the marked improvements of the past year or more.

Underwear has been quieter than hosiery this month. The dullness has been felt the more, because many visited the market, but bought little. The few duplicate orders on heavy weights have been the most depressing feature. Orders last year for ribbed and mixed woolen underwear were not abnormal, consequently liberal duplicate orders were confidently expected. The continued high temperatures are to some extent responsible for the lack of duplicate orders received, yet there is small chance that the estimates made will be realized even when the fall season has fully developed.

The best results have been got in the light weight business for next spring, more particularly on the better qualities.

The call for fancies, in its way, almost keeps pace with that in hosiery. Several manufacturers of mercerized goods have shrewdly taken advantage of the fancy tendency by combining the two; they seem to have hit the nail on the head thereby.

While there is a deep-seated general feeling that nothing is in sight to warrant higher prices, the markets are steady, and cancellations few. About all the cancellations have been on low grade cotton fleeces, that gained their hold simply through their cheapness. Some expect their down fall to be permanent.

Flat woolen underwear ought to show a corresponding improvement, but it does not. Perhaps this trade is in suspension, so that its transfer will later be felt. The chances are, however, that it will be distributed among various cheap goods.

Cheap Fleece-Lined Cotton Underwear.

A manufacturer selling direct to the retail trade tells us that if he may judge from his experience in the Eastern States, the craze for cheap cotton fleece-lined men's goods has passed by, and very little will be bought by the retailers for the next season. New England retailers say that they are ordering hardly any of these goods, and none at all of the cheaper qualities. What orders they are placing are for a better grade and for merino and wool goods.

The fleece-lined cotton garment was a seductive bargain for the man who was looking for a cheap winter garment. It felt wooly and bulky and gave the impression of being warm, but after a few times' washing, the wooly feeling had largely washed away and disappeared and the nap began to ball or bunch up. Then being of cotton, it lacked the absorbent quality of wool, and when wet from perspiration became clammy and produced colds. This is the story that the retailers say their customers tell them, and those who have bought and worn a set for a year or two want something else when they come back to buy new outfits.

Among novelties shown in the trade is a plush-lined ribbed garment. This was knit with an extra thread, the same as spring needle plush goods, but, apparently, was not altogether successful, because the line was withdrawn after samples were shown. Indeed, it is hard to see what especial advantage there was in making ribbed goods in this way, for the feature of ribbed goods is their elasticity, and the extra thread knit in destroyed that, and made the goods stiff and bulky.

Bleaching Knit Goods.

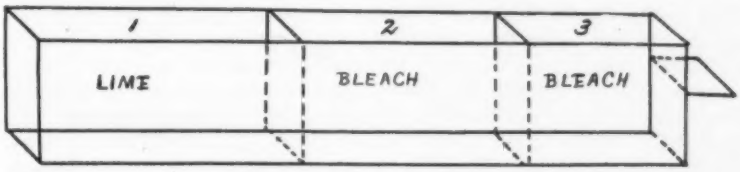
Having read with much interest the valuable articles in the July and August numbers of the Textile World, upon bleaching knit goods, I desire to add my testimony to the value of chloride of lime as a cheap and efficient bleaching agent. I have used this method of bleaching for fifty years, and have found that with proper care and the correct method, no injury to the goods need be feared.

The bleaching process itself is simple, but the danger lies in the preparation and finishing of the goods, as here serious injury may be the result of carelessness or improper methods. Bleaching with chloride of lime is a good deal like handling edged tools. One must be skilful, or he will get hurt. We often hear of mills, both large and small, in serious trouble, owing to damage to their goods in bleaching. I know of one company whose losses were so heavy from this source that they were forced out of business. Large quantities of goods had been delivered, and upon examination they were found to have been rotted by the lime, and were practically worthless, and yet this company, during their career, boasted loudly of the beautiful white goods which they produced.

Probably more care is required in the bleaching of knit goods than with any other class of cotton fabrics, for that essential quality of knit goods (elasticity) must be maintained, and if in any way the chloride of lime attacks the knit fabric, the elasticity of the goods is impaired, even if the fibre itself is not destroyed. Every trace of chlorine must be removed from the goods.

Several years ago, I devised a meth-

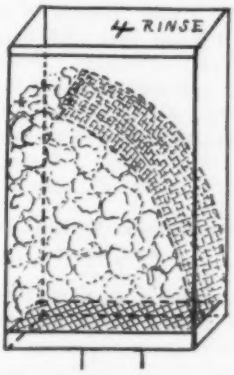
od of removing the chlorine, which is both cheap and simple, providing the necessary head of water is at hand for rinsing the goods. This method requires no boiling, and is very different from that mentioned by "Bleacher." While no doubt "Bleacher's" method is a good one, and is practiced in many mills, it is slow, and requires a large amount of labor, and adds materially to the cost of the goods.



In any process that may be adopted for bleaching, good tanks are essential, especially those for the preparing of the chlorine. They should be of sufficient size to hold material for several days' work, and I think it will be found that square tanks are the best, as they occupy less room in proportion to their capacity. They may be built of brick and cemented, and then cemented inside with a heavy coat of Portland cement. If they are made of wood, the stuff should not be less than three inches thick, and lathed and plastered well inside with Portland cement. The tanks should be provided with covers, so that they may be closed when not in use, in order to retain the chlorine, the odor of which is very offensive to most people. The tanks should be provided with pipes and valves, by which to draw off the liquor, as required. This is much better than to dip the liquor out with pails, as is usually done. The pipes should be inserted in the tank high enough so as to be above all sediment, which it is necessary to frequently remove.

The above suggestions I have offered for the benefit of those who are still following the old-fashioned methods of bleaching with chloride of lime. My method will be made clearer to the reader by reference to Fig. 1, which shows the arrangement of the lime and bleach tanks. After the goods have been scoured, they are put into either tank 2 or 3, with sufficient water so that when the chlorine liquor is added the goods will be completely immersed. Before entering the goods, the strength of the liquor should be tested, and care should be taken that it is kept uniform. It is very necessary to adopt a regular system in working the bath, as variations in the strength or other details of the process are the causes of damage. I always prefer a weak bath, where there is plenty of time.

Tank 3 is arranged to drain the goods on a perforated table, which is so arranged that it can be tipped down, letting the goods fall into the rinse box, No. 4, below. The dotted lines show the false bottom of the



rinse box. The water coming up through the flume and false bottom, keeps the goods in constant motion, exposing all parts of the goods to the rinsing process, until every vestige of chlorine is removed.

If the box is properly constructed, there is no labor necessary, the force of the water doing the work. The water escapes by an overflow provided for the purpose. This is covered with

a grating. to prevent the goods from passing out with the water. After the goods have been thoroughly rinsed, a very small quantity of sulphuric acid may be added to the tint bath, before entering the goods. The bleach liquor may be used for successive batches of goods, by adding chlorine to keep the strength up to the required standard.

The goods should be prepared and scattered loosely before being put into the bleach tank, otherwise, they are liable to come out spotted, on account of the bleach liquor not reaching all parts alike. While in the bleach liquor, they should be kept in agitation by means of a smooth pole.

The great liability of injury to the goods in bleaching with chloride of lime renders it very desirable that only the best methods should be employed, and I trust that the method which I have just described will be of assistance to the trade. It avoids handling the goods during the rinsing process. It is not in general use, as up to the present time I have carefully kept the method a secret. I have bleached a vast quantity of goods, by which I know that with care it will give excellent results. Probably no method will ever be found for bleaching with chloride of lime which does not necessitate care in its conduct.

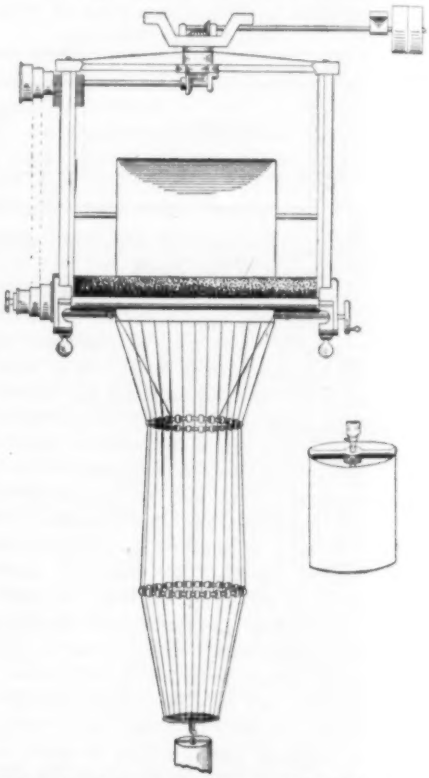
OLD SUPT.

The New Johnston Vertical Dryer for Knit Goods.

Seldom has a machine been placed on the market which has so universally won favor whenever seen. Its simplicity is an important feature, and will be apparent from the illustration and description which we give.

The goods are first passed over a hot air pipe, the upper end section of which is shown at the extreme lower part of the cut. This pipe conveys the hot air from the blower to the cage and may be of any desired length; pipe is hooked to a cage or spreader, which is the same size of pipe at point of junction, and increased in size as shown in illustration until the size at which it is desired to dry the goods is reached. At this point small rollers are provided to facilitate the passage of the goods over this cage or spreader which is made of wire running longitudinally.

This cage is from this point of uni-



form size for some distance, when it is flattened and spread out widthways and the two edges are placed against the two sand rollers of the upper part of the machine.

The cloth passes over this spreader or net on which the drying takes place and is drawn along by the sand rollers. As it comes from these rollers it is wound on a loose roll which is turned by friction with the sand roller on which it rests.

The hot air coming from the pipe at bottom of machine, passes through and quickly dries the cloth as it passes along the cage.

This cage is made of open wire work and both sides of the goods are exposed to the hot air.

The dry cloth passes from the spreader directly to the sand rollers and then wound on a loose cloth roll, allowing no chance for goods to get out of shape.

Different sizes of spreaders are provided for different sizes of goods, and the speed can be easily varied to suit different weights or qualities.

The frame of the machine which supports sand rollers and dry cloth, is attached to the ceiling. The height of machine over all is only 7 feet, and in only occupies 4 sq. ft. of floor space; the builder claims that from 12 to 16 of these machines can be placed in the space occupied by four of the ordinary horizontal dryers.

As the hot air is driven upwards it has a tendency to keep the room next to the floor cooler.

Every manufacturer appreciates that all goods must be stretched and rolled straight when wet in order to have the wale straight when dried. If this is done, the napper has but little effect in twisting the goods out of shape. This machine is so designed as to accomplish this end.

It revolves on the pivot from which it is suspended so as to straighten the cloth on hot air pipe, and have it come straight and even to the cage or spreader. This can be done while the machine is running, and it is not necessary to stop for anything. The rolls are quickly and easily changed.

The success which has attended the introduction of this machine is quite remarkable. Many manufacturers in New York State and some Eastern manufacturers have been to see it, and most of them have placed orders. The builder now has a number of written testimonials and other references, which will be sent on application, and any further information about the machine may be had from William T. Lintner, Gloversville, N. Y., the general sales agent for the United States and Canada, for E. M. Antisdel, the sole manufacturer.

Mr. Antisdel also has nearly ready for the market a new style power neck marking machine.

Seaming and Trimming Machines.

Previous to the introduction of trimming devices on sewing machines the seams of knit underwear were simply sewed up, leaving quite wide raw edges beyond the seam to be trimmed off with shears by hand.

The method of seaming the abutted edges of underwear was not, and is not now, in general use, probably because of the increased cost; but, about twenty years ago it was accomplished by a man then prominently identified with the designing and construction of sewing machines, and well known in that line today, who invented a machine for one of the leading full-fashioned underwear manufacturers in this country. This machine sewed together the abutted edges in a manner shown in the accompanying illustration, Fig. 1, which is enlarged to convey a clearer idea of feed movement and relative position of stitches. This apparently gave the manufacturer satisfaction for about four years, but was then abandoned, though the consideration paid must have given splendid satisfaction to the inventor. Later, seams were made in this manner on the Way machine. This is accomplished with a Zigzag Singer Horn machine and appliances for controlling the curl of the edges of the cloth, and makes a garment very like a full-fashioned garment, as illustrated in the Way underwear.

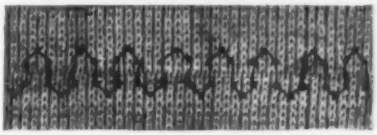


FIG. 1.

The Union Special Double Interlock machines are also used for seaming

the abutted edges of knit fabrics. The seam is composed of five threads and is very elastic. On some fabrics a wider seam is desired; then, it is preferable to use the Triple Interlock machine which uses six threads and produces a garment very like a full-fashioned one, as illustrated by the union suits made by the Northwestern Knitting Company.

Until somewhere in the vicinity of 1880, the woman-behind-the-shears was the only trimmer used in the knitting mill, at least in a mill making underwear (shirts and drawers), stockings being sewed and trimmed by machine previous to that date to some extent on the Blanchard machine. About that date appeared circular disc cutters with a portion of the disc blank thereby permitting the feed to operate freely. Later, appeared various other devices and improvements, until today, and for many years past, trimming before and after sewing with the shear process, and trimming simultaneously with the abrasion process, practically have the field to themselves; the more so now that covered seams are in vogue. The machines are radically different from each other; so, too, is the process of making the so-called covered seam, and a description of the "Willcox & Gibbs," illustrating the cutting process, and of the "Union Special," illustrating the abrasion process, with diagram of stitches, serves to illustrate the two distinct types employed for this purpose.

The Willcox & Gibbs, one of the machines in general use at the time the manufacture of knit underwear began, soon applied a trimmer to their sewing machine, after a demand was apparent for a machine sewing and trimming the seams in one operation, which, by occasional improvements, has arrived at the present advanced state of the art whereby it makes by one operation only, including trimming and covering of raw edges, what in the early days of the industry would have been, or were, three operations, viz., sewing up the seam, trimming the seam, and covering it. The later machine does it all at a wonderfully high rate of speed, and is easily and quickly learned by an operator. It is most ingeniously contrived and designed, built in the best machine shop in the country, on a system which others try to copy in part, that has given to them the deservedly high distinction of having the best built machine on the market since the time the company was established in business in 1859.

The "Overlock" elastic seam, in which the elasticity of the stitch equals the full stretch of the goods, completely covers that portion of the goods outside of the seam so that it presents a sightly and finished appear-

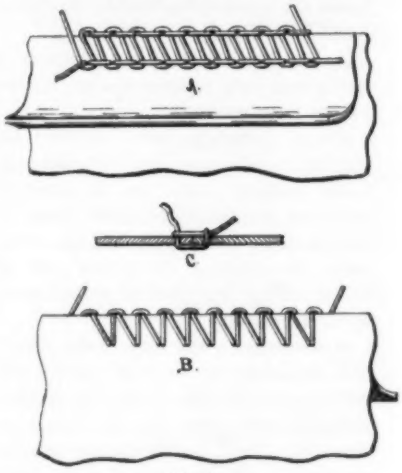


FIG. 2.

ance greatly adding to the general appearance of the whole garment, and as the machine is provided with adjustments for widening or narrowing the space outside the seam, either "ribbed" or "flat goods," or "on the bias," or "with the wale," can have material enough outside the seam to give it the required strength. In Figure 2, diagram A represents the upper side of the two pieces of fabric after passing through the machine. B in the same figure represents the stitching on the under side, and C is a sectional view of the seam after it has been flattened out.

(To be continued.)

SILK DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Some Mistakes in the Silk Trade.

At one time silk-culture occupied considerable attention in this country; books were published on it; it was discussed in scientific societies; and Congress made appropriations for its encouragement; yet it never became more than a pastime or fad; and people have become so indifferent to it now, thousands wear silk, who know nothing of its origin; and if they try to inform themselves, meet with so many contradictory statements, they conclude the writers know little more than themselves. I was amused by reading the article on silk in a new American edition of Chambers' Encyclopedia, which stated the moth eats its way out of the cocoon. It doesn't eat its way out; has nothing to eat with; eats nothing for some time before beginning to build the cocoon, until it finishes its work as a moth and dies. Silk manufacturers have tried to envelope their business in as much mystery as the egress of the moth from the cocoon, and some English writers have attributed its failure to keep pace with other textiles to this exclusiveness.

There has been considerable blowing of trumpets lately about the great expansion of silk manufacture in this country. It reminds me of the wool craze in Ohio about 30 years ago. Ohio being the great wool state, some people thought there was a fortune in building mills and manufacturing it on the spot. Mills were built but fortunes didn't materialize; mills were closed, machinery put on bargain counter. In 1881, I saw a whole outfit of one-set mill bought for $300. This was not fault of wool business but of those who tried to do business on a false basis, and this is the reason so many silk firms have failed lately, and is especially true of those who left Paterson because of labor-unions and 55 hour law.

Pages could be filled to prove this, but one instance is as good as a hundred: One of the oldest silk firms in Paterson was one of the first to join the exodus movement. The people of a Pennsylvania town gave free mill site, exemption from taxation, built a mill, and firm moved machinery from Paterson and started business, paying the help about half Paterson wages. With what result? This firm usually makes auction goods, but lately received a fair-sized order for taffetas. One would suppose the goods would be made in the Pennsylvania mill where there is 60 hours, no labor-unions, and low-priced help; but, that mill is idle; the Paterson mill running, showing that skilled labor is better, even with unions and 55 hours thrown in, than free mill sites, exemption from taxation, bonuses, and low-priced help. It must not be inferred from this that silk manufacture is so difficult, but it needs common sense, intelligence, and industry.

When in 1810, Napoleon tried to destroy the commerce of England, by prohibiting the admission of foreign cotton goods into France, the people settled about the lake of Zurich were mostly employed weaving muslins. Losing their usual market by this prohibition, they changed from cotton to silk, this best fitting their previous habits. This change was attended with so much success, that in a few years they were able to compete with their neighbors, in many branches of silk manufacture in the German markets, and when the Bourbon government was restored in France.

Swiss weavers were still further benefited by the injury brought on French manufacturers by the internal policy of their government.

In 1814, Zurich and its environs contained about 2000 looms, and so late as 1820, Germany was entirely supplied by France with wrought silks; but since then, silk goods of Swiss manufacture sent to the markets of Frankfort and Leipzig, have been so abundant as to interfere with sales of French merchants. In 1828, Zurich had from 9000 to 10,000 silk looms and a number of factories; three of the largest employed 2600 workmen, one alone, 1204. At one time, Zurich made nothing but Florentines, Basle taffetas; now both make all kinds of silk goods, except crape and satin. Enough umbrella silk is made at Berne to supply Germany and the north of Europe. Shaffhausen and St. Gall, used to make fine cotton goods, but since other cantons succeeded with silk, they tried it too.

Here is an example of healthy expansion; no free mill sites, exemption from taxation, bonuses, or low-priced help; an example of how a large community, not only changed from one class of goods to another entirely different, but expanded extensively on their new work without a set back of any kind; nor do they seem to have had any difficulty changing from cotton calculations to that of silk. They were handloom weavers; owned the looms; didn't have to lose hours on bum looms waiting for fixers; wait till factory gates opened, or be shut out if a few minutes late.

There is one fairly managed mill in Paterson. If it ever had any trouble with help, I didn't hear of it; if it has an annex, I don't know of it; an addition was built to its Paterson mill lately; it runs full, year in, year out; and was awarded first prize on some goods exhibited at Paris exposition. If one management can get along with Paterson help, others could too, if they knew how.

Some years ago, I saw daily, the children of two families playing together; one was always tastefully, but inexpensively dressed, the other expensive tawdry; one was the child of an ordinary wage-earner, whose wife bought the material and made her children's clothes; the other that of a hotel-keeper, whose wife bought the material and had it made by a dressmaker. This is an instance of natural good taste and the want of it. In France, manufacturers are always on the lookout for boys of exceptionally good taste to have it cultivated to the highest degree of excellence for their business. Why not girls too? If manufacturers are doing anything of the kind here, I haven't heard of it.

What are called designers in this country, may be divided into three classes: First, those whose natural good taste has been cultivated to a high degree of excellence. Second, the conventionalist, who is almost without taste, but has a good memory and has mastered the laws of color harmony, and details of the various lines of which figures are formed. He resembles musicians who cannot tell one sound from another, but has mastered the technic of an instrument; time excellent, expression zero. Third, the mere maker from sample. There are few, if any, of first, in this country; some of the second; quite a number of the third. I know the designer of a successful manufacturing firm who, if he had much taste, would not appear on the street in such clothes as he wears.

A manufacturer receives a 4 by 4 inch, soft silk sample of dress goods, from a commission house, asking terms per yard, for 1000 yards. It is a stripe of one inch dark-blue tabby, and one-eighth inch light-brown 3 shaft surah; it has to be 28 inches wide, 112 threads to inch, both warp and filling. It doesn't make any difference whether he ever heard of a French ell, denier, metre, or gram, if he knows that about 275 yards of cocoon filament or bave, weighs 1 grain.

This is hard silk; his sample is soft; and, in boiling off, or changing from hard to soft silk, it loses about three-tenths in weight. Then about 390 yards of soft silk bave will weigh 1 grain. He pulls out a thread of each kind of yarn and finds blue warp to be composed of 2 threads of 10 bave Japan silk, with 10 twists to inch; brown warp to be 2 threads of 12 bave Tussah, 15 twists to inch, and filling to be 1 thread of 16 bave Tussah 2 twists to inch. By calculation he finds there are 31,360 inches of blue warp bave, 5376 inches of brown warp bave, and 11,152 inches of blue filling bave, making 1330 yards, which being divided by 390, gives 3.4 grains as weight of sample. Putting on scale, it weighs nearly 5 grains. As silk bave is produced by a caterpillar, not machines, calculations can never be more than approximations, no matter how careful, the reeling, but there is too much difference here, which can only be accounted for by weighting in dyeing. He knows what it will cost to manufacture, has prices of several dyers, weighting included, so sends to several dealers in raw-silk for cash prices on conditioned silk of the kinds he needs, then sends estimate to commission house, and gets an order for 50 yard sample, with understanding that he be allowed 25 per cent. extra if he doesn't get full order.

In 1 yard of pure-dye silk, like sample, there will be 2800 yards of blue Japan warp, weighing 143.6 grains, 350 yards of brown Tussah warp, weighing 2 grains, 3136 yards of blue Tussah filling, weighing 154.3 grains. This is nine-tenths of what was received from dyer, and what dyer received was only nine-tenths of what throwster received, then dyer boiled off three-tenths of weight, so exact weight of raw-silk he would have to order, would be: 1.7 lbs. 10 bave Japan; 4 oz. 12 bave Tussah; and 1.62 lbs. 16 bave Tussah. He orders 2 lbs. 10 bave Japan, ¼ lb. 12 bave Tussah, and 1¾ lbs. 16 bave Tussah. He tells dyer to add 50 per cent. weight, and as he wants to weave warp from one beam, tells warper to use 28 dent space reed, blue, 4 ends in dent, brown 4 and 3 alternately. He has it entered on 4 shaft tabby, 3 shaft surah, 56 dent reed 2 ends in dent. He sent sample and got order. He gave raw-silk dealer 60 day note, and received 30 day note from commission house.

OLD CONTRIBUTOR.

The Silk Industry in California.

The Chamber of Commerce of the city of San Diego, State of California, recently investigated the prospects of the silk industry in that part of the United States. The examination resulted in demonstrating that, while in France the season for the production of raw silk lasts but forty-two days, in San Diego four sets of cocoons can be raised each year, as the season lasts two hundred and forty days. As a result of this showing, the Chamber of Commerce is now devoting its energies to the establishment of the new industry. Arrangements have been made for a large number of silk-worms, and 5000 mulberry trees will be distributed in the agricultural districts surrounding the city.

Instruction in Silk Manufacturing at Lyons, France.

In a recent report of J. C. Covert, American consul at Lyons, France, it is stated that Lyons is a school for teaching the manufacture of silk, as well as a great center of the silk trade.

Young men come here from all countries to learn to make silk, acquiring the language while learning an important branch of commerce. In the silk department of the commercial school there are generally from 250 to 300 pupils. The price of tuition is 800 francs ($154) per year for Frenchmen and 1,200 francs ($231) for foreigners.

All kinds of silks, velvets, plain and figured goods are made by the learners under the superintendence of skilled

workmen, with the most improved machinery. Some of this machinery bears the mark of a Philadelphia or Paterson manufacturer. A Singer sewing machine sews the pattern cards together. Thirty looms are run by hand and twenty-five by steam.

The municipal school, on the Croix Rousse hill, the traditional home of the weaver, admits only Lyonnese youth. It is sustained by the municipality. Any boy 15 years of age, with the residence qualifications, can here learn the theory and practice of silk weaving, designing and making patterns for 9 francs ($1.73), the total registration fee for the three departments. The day course of study is ten months.

In the night school, provided for children who are employed during the day, a course of three years' study is required before graduating. Among the 300 or 400 pupils are the children of the rich and poor, some kept there at a sacrifice on the part of their parents.

Each learner is required to keep a carefully written diary of his work, with abstracts of lectures, patterns of silk, designs of machinery, diagrams, etc. A presentation of this book to a silk dealer invariably secures him a situation.

DESIGN FOR SILK FABRIC.
(For the Textile World by Ludwig Brown.

POWER DEPARTMENT.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

ELECTRICITY—STEAM—WATER.

The World's Coal Supply.

Monsieur Paul Leroy-Beaulieu, the great French political economist, has published three elaborate articles entitled "The coal question: the near and the distant prospect," from which we translate and abridge.

Monsieur Beaulieu attributes the late rise in price to the strikes and to the increased wages paid to coal miners; to high freight rates on railroads and water routes, caused by a sudden increase in industrial activity all over the world, and the use of a large part of the English merchant marine in the Transvaal war; to the development of the metallurgical industries for the construction of armored ships, and to activity in other fields of industry in which there is a continually increasing use of iron; in a word, to an increased demand and a diminished output, by reason of strikes and the falling off in production, rise of wages, delay in transportation, and higher freight rates on land and water.

He says: "What of the future? Those who remember previous coal famines, especially that of 1874, think that coal will, in two or three years, return, or very nearly, to its normal price. Others are of the opinion that this rise will continue, and that there will be no fall in prices before 1902, and that even then it will be very slight. They reason that the supply of coal may be exhausted, but cannot be reproduced; that newly discovered mines can hardly replace those that are being exhausted; the consumption must go on increasing; that the new countries, especially the United States, Japan, and before long, China, are very far away."

The writer expresses the opinion that there will be a fall in the price of coal within the next eight or ten years, and that within a year or eighteen months the price is more likely to decline than to remain as at present, but that prices will be long in returning, and that perhaps they will never return to the low rates of five or six years ago.

Monsieur Beaulieu thinks, however, that she will continue indefinitely to be an important coal producer, and he regards it as impossible to limit the working of English mines to a depth of 2000 feet, as in France mines are worked down to 2500, 3000, if not 3600 feet. In his second article Monsieur Beaulieu reiterates the opinion that as there was a fall in prices after the rise of 1875 and 1890, there may not be a return to the low figure of 1895 and 1896.

He adds, as to the more distant future, a quarter, one-half, and for still stronger reasons, a century, the outlook for Western Europe is much darker. It is certain that the coal deposits in that quarter of the world tend toward exhaustion, and although new deposits outside of Western Europe, as we shall see, are known and will some day be worked, it is clear that one of the causes of the prosperity of Western Europe, especially that of the British Islands, will gradually diminish, and that even as far as the whole world is concerned, the production of coal cannot follow indefinitely the demands of consumption, if they should continue to increase as they have during the past half century. Monsieur Beaulieu refers to the accompaying table of the probable population and estimated coal product of the United Kingdom:

Monsieur Beaulieu thinks the population not likely to increase in the proportions indicated above. Instead of 54,000,000 in 1950, it may be that the population will number 47,000,000 or

perhaps less. On the other hand, there is no reason to believe that the coal production of Great Britain will increase from 211,000,000 to 350,000,000 tons. He says:

We are convinced that it will develop much more slowly. The first figure, 211,000,000, is too high for 1900. We do not believe the product will be over 206,000,000 or 207,000,000 tons. By referring in the Statistical Abstract of 1899 to the figures giving the production in Great Britain from 1890 to 1898, we see that that production passed only from 181,614,288 tons in 1890 to 202,054,516 in 1898. This is an increase of 20,500,000 tons in eight years, or 2,500,000 tons per year. The same yearly progression would give about 330,000,000 tons in 1950 instead of 350,000,000 tons, as estimated by Monsieur Loze.

He continues:

From the table above, it will be seen that the coal area of the world extends over a space just three times as large as France and fifty times as large as the coal beds of Great Britain. When we consider that these figures do not include the Rocky Mountains in the United States and Canada, or Siberia, Central Asia and the Caucasus; if we add that Africa is not mentioned, although coal mines have been worked there for some years and the mines of the Transvaal and of Natal produced over 2,000,000 tons in 1899; that our Tonkin is omitted, that Central and South America do not figure at all, and that the exploration of the world will probably result in the discovery of other mines, it may without exaggeration be estimated that the coal area of the world is not less than 2,000,000 square kilometers (772,200 square miles).

Years.	United Kingdom population	Coal production in the Kingdom.	Coal exportation and foreign transports.	Home consumption.
		Tons.	Tons.	Tons.
1900	40,613,047	211,325,456	51,357,225	159,968,231
1910	43,691,716	243,140,629	62,803,196	180,337,433
1920	46,602,931	289,316,782	74,888,454	194,428,276
1930	49,674,348	295,080,236	87,075,726	218,004,510
1940	52,025,359	322,532,297	99,158,834	223,373,463
1950	54,522,071	349,876,593	110,202,548	239,674,045

Monsieur Beaulieu thinks it probable that the coal mines of England contain twice or three times the 14,500,000,000 of tons which are supposed to lie above a depth of 610 meters, about 1900 feet. He therefore estimates the coal contained in British mines at 30,000,000,000 or 40,000,000,000 of tons. Supposing the quantity mined would amount to 240,000,000 tons per year, there would be a supply for one hundred and thirty to one hundred and sixty years.

The following table of the coal resources of the world is copied from Monsieur Loze's work:

At present, it is possible that the coal mines worked do not cover an area of over 100,000, perhaps not even 100,000 square kilometers (38,610 square miles).

However, we are about to deliver more or less important quantities for testing purposes to certain manufacturers in the south and west of France, which we will procure from our importations at Marseilles and St. Nazaire.

Our opinion conforms to that expressed by the Economiste (French), which we send to you, and is that American coal will succeed in planting itself and in remaining for a period of more or less duration in the Mediterranean, where it can compete with English coals, which have to support a freight ranging from 9s. to 16s. 6d. ($2.19 to $2.79) per ton, but only under exceptional circumstances can it arrive in the ports of the channel and the north of Europe, for which the freights from England vary from 4s. (97 cents) to 6s. ($1.46) or 7s ($1.70) per ton, figures so low as to remove the probability of competition.

Countries.	Surface in square kilometers.	Square miles.
China	600,000	231,660
United States (not including Dakota and the States and Territories of the Rocky Mountains)	517,980	199,992
Canada (east of the Rocky Mountains)	168,340	64,996
British India	91,940	35,498
New South Wales	62,160	24,000
Russia (not including Siberia, Central Asia, and Caucasus)	51,800	20,000
United Kingdom	30,820	11,900
Spain	14,244	5,500
Japan	12,950	5,000
France	5,488	2,080
Austria-Hungary	4,636	1,790
Germany	4,584	1,770
Belgium	1,320	510
Total	1,566,080	604,696

In his third and last paper on this subject, Mr. Beaulieu asserts that the question of coal is not alarming unless we confine our attention to Western Europe; that if the coal beds of the West should within forty or fifty years be worked with greater difficulty or become exhausted in a century and a half, no such apprehensions need be entertained in regard to the coal mines of the world. There is a sufficient quantity in the world for ten centuries' consumption. The development of the mines of Japan, China and Siberia will be important factors, not only as concerns local consumption, but also for coaling the commercial fleets which plow the Chinese and the Indian seas. The result will be that England will be called upon to send less and less coal to that part of the globe.

The following table, given by Mr. Beaulieu, shows that the importation of coal into the Indies is rapidly decreasing:

	Tons.
1895	808,983
1896	746,850
1897	481,036
1898	248,054

The United States and China, he says, are the countries best provided with coal. China has 600,000 square kilometers (231,660 square miles), the United States 518,000 (200,000 square miles), without counting Dakota and the Rocky Mountain States, and Canada has 168,000 (64,865 square miles). Combining Canada and the United States there is an area of 686,000 square kilometers (264,865 square miles), while England has only 30,000 square kilometers (11,583 square miles). North America in the matter of coal is an incomparable country. The writer continues:

> There are American coal mines which are near the ocean, the Great Lakes, or navigable rivers. Railroads are built to transport coal at excessively cheap rates —1100 kilometers (683.5 miles) for 10 francs ($1.93) per ton. Freight from America to the Mediterranean is high, generally not less than 15 francs ($2.90) per ton, sometimes falling to 10 and 12 francs ($1.93 and $2.32). At the mouth of the mine the price of coal is seldom over 7 and 8 francs ($1.35 and $1.54) per ton; it often falls lower. From these facts it may be concluded that American coal can be laid down in the Mediterranean ports at from 30 to 35 francs ($5.79 to $6.76) a ton. Probably when this trade, which is absolutely new, is well organized, it will be sold in the Mediterranean for 25 to 28 francs ($4.85 to $5.40), if not lower.
>
> When we lift our eyes from the little countries of Europe and contemplate the world as a whole, when we consider the new and the coming coal fields, we are convinced that the world is not nearing an exhaustion of that combustible, and we conclude that the great rise in coal during 1899 will undoubtedly be of but little more duration than the previous high prices of 1875–76 and 1890-91, though it is possible that the low figures of 1895 and 1896 will not be reached. But a small deficit is necessary to raise the price. The total world's consumption reaches from 650,000,000 to 700,000,000 tons. A small deficit of but 3 or 3½ per cent. may double the price. But as there is an increase of from 3 to 3½ per cent. in production, a great increase in price from that cause is not probable.

Mr. Beaulieu concludes his study by citing the substitutes for coal, not referring to petroleum, because it may be threatened with failure of supply, as with coal. He mentions electricity, supplied by hydraulic force, capable of developing enormous resources. He recently learned that in the South of France an industry which consumed 20,000 francs ($3860) of coal per year is substituting electric force from a waterfall 15 kilometers (9⅓ miles) distant. He thinks that recourse will be had to hydraulic force in the region of the Pyrenees, the Alps, and the Vosges. Acetylene may diminish the use of coal, and the march of progress will bring other substitutes.

An Ounce of Prevention.

III.

In cases where the machine pulleys are near a floor and driven by belts passing through the floor, guards should always be provided. The most dangerous place is where the belt first touches the pulley rim in approaching it. The belt shipper, which is used for tight and loose pulleys, generally affords protection at this point, but in cases of single belts not otherwise guarded, this point of intake should be carefully protected.

It often happens that owing to a defective shipper the belt works back on to the fast pulley after the operator

has thrown it over to the loose pulley, and accidents occur by consequent sudden and unexpected starting of the machine. Belts can be easily unshipped in cases where no special belt fork is provided, by the use of a simple pole in the hands of an experienced person. A slight pressure on that portion of the belt approaching and near the pulley is sufficient to throw it off. The replacing of belts is much more difficult, especially where no guards or fencing is provided, and in such cases none but experienced men should be allowed to attempt it.

J. Calder, in his work entitled The Prevention of Factory Accidents, in speaking of protection against accidents on circular saws, says that until a short time ago the only prevention in use was a piece of beveled edge steel, about the thickness of the saw, placed at the back of the saw gate, and called the riving knife, and a guard extending this knife to more or less of the saw circumference. Since the agitation for better protection was started a few years ago, many devices for safeguarding circular saws have appeared, but it is generally admitted that no universally applicable saw guard yet exists, as the extent to which protection is possible is determined by the nature of the work.

The fencing by movable doors or lids of all openings in the bench to the lower part of the saw should be invariably carried out for every variety of tool. The protection of cross cutting saws, used only for limited depths of timber, can easily be effected by a hood made of wire netting, sheet iron, wood, or other suitable material. This hood is fastened behind the saw, where it is secured by a hinge on the fixed portion of the bench, and the wood is fed by hand or by means of a sliding gauge table, and the operator's hands need never approach the saw teeth. This is a very effective device.

Heating Surface of Boilers.

Prof. Fr. Freytag in the Polytechnioches Journal writes on the heating surface of boilers. The writer insists that the surface of a boiler directly exposed to heat only should be recognized as its actual heating surface, nor is there any reason, in his opinion, why this rule should not be universally observed. The builders of fire-tube boilers might, indeed, object that the makers of water-tube boilers would derive all the benefit from this recognition, for with an equal number of tubes of the same length the actual heating surface of a water-tube boiler calculated on this basis figures out at 7 to 11 per cent. greater than that of a fire-tube boiler. This is certainly correct, continues the writer, but then the water-tube boiler is admittedly superior to the fire-tubes type in this respect. In his calculations the writer does not give a definite value for the heat coefficient of the heating surface. On the other hand, it is sufficiently well known that the conducting power of one square foot of heating surface relative to one type of boiler may be double that of an equal area of surface in another type. The facility with which the heating surfaces may be cleansed of soot and ash is also a consideration, and here we find a reason why makers of fire-tube boilers need not fear the competition of the water-tube boiler, despite the somewhat smaller relative heating surface of the former type with the same number and length of a given sized tube.

Prevention of Boiler Scale.

The following method has been patented by an Antwerp man, for preventing scale in steam boilers. A mixture of sugar, tannin extract, silicate of potash or soda, and boric acid is added to the boiler water to keep the salts in solution; when the water attains a density of about 15 to 25° Be., the boiler is "blown off." The working periods range from a fortnight to three months, according to the quality of the water in use. Glycerin and alkaline sulphates are sometimes used in the mixture.

DYEING DEPARTMENT

Dye Recipes for October.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16 page pamphlet, in convenient form for preservation. Subscription price for the TEXTILE WORLD with the Dyers' Supplement is $4.

The TEXTILE WORLD asks practical men to contribute articles for this department. We pay for articles accepted. The acceptance depends entirely upon the value of the ideas expressed. We make all necessary revisions, and urge practical men to contribute, regardless of experience in writing for publication. Illustrations add much to the value of an article, and photographs and sketches are desirable. All communications are confidential, and under no consideration is writer's name published or made known without his permission.

Recipe No. 145.

Green on Worsted Carpet Yarn.

New Acid Green 3 B X on 100 lbs. of worsted yarn.

Prepare the dye bath with

3 lbs. New Acid Green 3 B X.
(Farbenfabriken of Elberfeld Co., 40 Stone St., New York.)

10 lbs. Glauber's Salt.

5 lbs. Sulphuric Acid.

Enter yarn at 170° F., bring slowly to a boil, and dye at this temperature for at least one hour, exhausting the bath if possible. To insure evenness, it is well to add the acid in separate portions, rather than all at one time.

New Acid Green 3 B X is a very clear and level dyeing color, and is suited for wool and silk printing.

Recipe No. 146.

Garnet on Cotton Yarn.

Direct Bordeaux B on 100 lbs. cotton yarn.

Prepare the dye bath as follows

3 lbs. Direct Bordeaux B.
(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)

20 lbs. Common Salt.

Enter yarn at 180° F., bring to a boil and dye at this temperature for one hour.

Direct Bordeaux B produces a garnet red, with the characteristic properties of a direct cotton color.

Recipe No. 147.

Red on Worsted Carpet Yarn.

Erika B N on 100 lbs. worsted carpet yarn.

Prepare dye bath with

2 lbs. Erika B N.
(Berlin Aniline Works, 72 Front St., New York.)

20 lbs. Common Salt.

Enter the yarn at 160° F., bring slowly to a boil, and dye at this temperature for at least one hour.

Erika B N gives a clear and brilliant shade of bluish red, and in reduced percentages is valuable for the production of pinks.

Recipe No. 148.

Dark Green on Cotton Yarn.

Diamine Dark Green N on 100 lbs. of cotton yarn.

Prepare the dye bath with

3 lbs. Diamine Dark Green N.
(Wm. J. Matheson & Co., Ltd., 182 Front St., New York.)

20 lbs. Common Salt.

2 lbs. Soda.

Enter at 170° F., raise to a boil and dye at this temperature one hour.

Diamine Dark Green N yields excellent dark green shades on cotton. It is also suitable for the dyeing of union and satin goods, covering both sides in a very uniform manner. It is a homogeneous product, and in its properties closely resembles the well-known brands of Diamine Green B and G.

Recipe No. 149.

Pink on Worsted Yarn.

Acid Rhodamine R R on 100 lbs. worsted yarn.

Prepare dyebath with

1 lb. Acid Rhodamine R R.

(A. Klipstein & Co., 122 Pearl St., New York.)

5 lbs. Glauber's Salt.

2 lbs. Sulphuric Acid.

Enter yarn at 140° F., turn while bringing to a boil, and dye at his temperature for 20 to 30 minutes.

Acid Rhodamine R R is a new coloring matter, most suitable for the dyeing of wool and silk, either hanks or piece goods. It dissolves very easily, and is remarkable for the pure and full shade it produces. It is very fast to alkalies, acids, washing and sulphuring, and its fastness to light is much better than that of eosines, erychrosines, and phloxines.

Recipe No. 150.

Brown on Cotton Yarn.

Oregon Brown No. 31.

Prepare dye bath with

2 lbs. Oregon Brown No. 31.

(Anchor Color Manufacturing Co., 462 Cherry St., New York.)

20 lbs. Glauber's Salt.

Enter goods at 170° F., turn one hour, then bring to a boil and boil ½ hour. Shut off steam and run ½ hour longer.

Oregon Brown No. 31 has all the characteristic properties of direct cotton colors, and is valuable for the production of tan shades on hosiery.

Recipe No. 151.

Blue on Cotton Yarn.

Direct Blue 3 B R R on 100 lbs. of cotton yarn.

Prepare the dye bath with

3 lbs. Direct Blue 3 B R R.

(O. S. Janney & Co., 8-10 Letitia St., Philadelphia, Pa.)

20 lbs. Common Salt.

Enter the cotton about 160° F., raise to the boil, and continue the boiling for one hour, then wash and dry.

The above dyes an indigo blue shade and is very applicable to all classes of cotton work, especially on ginghams and shirtings. The shade produced is very fast to light and washing.

Recipe No. 152.

Red on Worsted Yarn.

Anthracene Red G N on 100 lbs. worsted yarn.

Prepare the dye bath with

3 lbs. Anthracene Red G N.

(C. Bischoff & Co., 87-89 Park Place, New York.)

20 lbs. Common Salt.

Enter at 180° F., bring to a boil, and dye at this temperature, gradually exhausting the bath with Acetic Acid.

Anthracene G N produces very bright shades and may be used for blanket headings, but if shades absolutely fast to fulling are required, an after treatment of 1 to 3 per cent. of Bichromate of Potash, may be given, boiling ½ hour.

The fastness to sunlight is excellent, and also the fastness to alkali and ironing.

Recipe No. 153.

Black on Cotton Yarn.

Oxydiamine Black J E I Extra on 100 lbs. of cotton yarn.

Prepare the dye bath with

5 lbs. Oxydiamine Black J E I Extra.

(Wm. J. Matheson & Co., Ltd., 182 Front St., New York.)

30 lbs. Common Salt.

2 lbs. Soda.

Enter yarn at 170° F., raise to boil, and boil one hour.

This new black for cotton is a concentrated product, and produces fine, full shades on cotton yarn and piece goods, being particularly suited for the dyeing of linings. Its properties are similar to the other well-known brands of Oxydiamine Black.

Recipe No. 154.

Yellow on Cotton Yarn.

Prepare the dye bath with

1 lb. Alizarine Yellow D. G.

(Victor Koechl & Co., 122 Hudson St., New York.)

20 lbs. Common Salt.

Enter yarn at 160° F., work while bringing to the boil and continue the boiling for one hour.

The bath is not exhausted, and for subsequent dyeings the percentage may be decreased one-third.

Alizarine Yellow D G produces a very brilliant shade of yellow with very good fastness.

Recipe No. 155.

Red on Worsted Yarn.

Anthracene Red on 100 lbs. of worsted yarn.

Prepare the dye bath with

3 lbs. Anthracene Red.

(A. Klipstein & Co., 122 Pearl St., New York.)

10 lbs. Glauber's Salt.

3 lbs. Sulphuric Acid.

Enter yarn at about 160° F., bring slowly to a boil and dye at this temperature at least one hour, exhausting the bath if possible. It is well to add the Sulphuric Acid in separate portions, rather than at one time.

Anthracene Red is characterized by its remarkable fastness to fulling, scouring, strong sunlight, and sulphur. It surpasses Alizarine in brightness, and is almost as fast to light.

Recipe No. 156.

Orange on Cotton Yarn.

Direct Orange O R on 100 lbs. of cotton yarn.

Prepare the dye bath with

½ lb. Direct Orange O. R.

(John J. Keller & Co., 104-106 Murray St., New York.)

20 lbs. Common Salt.

Enter yarn at 180° F., bring to a boil, and dye at this temperature for one hour.

Direct Orange O R is a concentrated color, and goes on the fibre very evenly, and will be found a valuable color for dyeing any form of cotton material directly. Like other direct cotton colors, it may also be used on wool.

Recipe No. 157.

Pink on Cotton Yarn.

Phenedine Pink J E on 100 lbs. of cotton yarn.

Prepare the dye bath with

⅛ lb. Phenedine Pink J E

(Sykes & Street, 85 Water St., New York.)

10 lbs. Common Salt

Enter yarn at 140° F., raise gradually to the boil and boil ¾ hour. Allow to remain in the bath while cooling, say fifteen minutes, lift, wash and dry as usual.

Phenedine Pink J E is a very serviceable color for silk and cotton mixtures, but in this case it is dyed with the addition of soap and Sodium Phosphate to the bath.

Recipe No. 158.

Tan on Cotton Yarn.

Union Tan No. 79 on 100 lbs. of cotton yarn.

Prepare the dye bath with

1½ lbs. Union Tan No. 79.

(Anchor Color Manufacturing Co., 462 Cherry St., New York.)

20 lbs. Glauber's Salt.

Enter goods at 170° F., turn ¾ hour, then bring to a boil and boil ½ hour, then shut off steam and run ¾ hour longer.

Union Tan No. 79 will work on cotton, wool and mixed goods, and its fastness is very good.

Recipe No. 159.

Dark Blue on Worsted Yarn.

Buffalo Black 10 B on 100 lbs. worsted yarn.

Prepare the dye bath with

2 lbs. Buffalo Black 10 B.

(Schoellkopf, Hartford & Hanna Co., 100 William St., New York.)

10 lbs. Glauber's Salt.

4 lbs. Sulphuric Acid.

Enter yarn at 160-170° F., bring slowly to a boil and dye at that temperature for one hour, exhausting the bath if possible.

It is well to add the sulphuric acid in separate portions, rather than at once.

Buffalo Black 10 B, when dyed in light shades such as two per cent., is very valuable for mixtures with Acid Violet, etc., producing cheap and bright shades of Navy Blue.

Recipe No. 160.

Orange on Cotton Yarn.

Direct Orange O R on 100 lbs. of cotton yarn.

Prepare the dye bath with

2 lbs. Direct Orange O R.

(John J. Keller & Co., 104-106 Murray St., New York.)

20 lbs. Common Salt.

Enter yarn at 180° F., bring to a boil, and dye at this temperature for one hour.

Direct Orange O R is a concentrated color and goes on the fibre very evenly and will be found a valuable color for dyeing any form of cotton material directly. Like other direct cotton colors, it may also be used on wool.

Paranitroaniline Red on Cotton.

Ever since the discovery of Primuline and the red obtained therefrom upon cotton through the reaction of the diazotized base with beta-naphthol, no coloring matter or process has attracted wider attention than that involving the use of paranitroaniline, and without doubt, none has received more careful consideration, although there are some points regarding it that are frequently overlooked in the ordinary course of dyehouse work.

Chemically, paranitroaniline is one of the three possible nitroanilines, and is the only one that is available for the process of dyeing cotton red. It is obtained commercially by treating 1 part of acetanilide with 3 parts cold nitric acid, sp. gr. 1.5, the solution precipitated with ice water, and the paranitroacetanilide filtered off, subsequently decomposing it by boiling with hydrochloric acid. Perhaps the largest amount of the product is obtained by a modification of the above process, due to Noelting and Collin, and is as follows: 1 part acetanilide is dissolved in 1 part glacial acetic acid, and then merged with 4 parts conc. sulphuric acid, the entire volume of liquor being kept cool with ice and salt, to which is added 0.6 parts of 85 per cent. nitric acid. After the reaction, the paranitroacetanilide is precipitated by means of ice water, filtered off, and converted into paranitroaniline with hydrochloric acid.

Paranitroaniline is soluble in 45 parts boiling water, and 1250 parts cold water, from which it crystallizes in beautiful yellow needles, which possess a pretty constant melting point of 147° C. an indication of high purity.

Practically, paranitroaniline red offers many advantages over other cotton reds, inasmuch as it is available not only for yarn and piece goods dyeing, but also admits of many pleasing discharge effects, the details of which are herein given.

DYEING COTTON YARNS.

The process of dyeing cotton yarns is conveniently divided into two parts; first, impregnating, and second, developing. The apparatus required is very simple, as shown by the accompanying sketch, Fig. 1. This form of construction is recommended, as it enables the dyer to turn out a maximum quantity of yarn with the least quantity of liquor. The liquor used for impregnating is prepared in small quantities only, as required for a day's

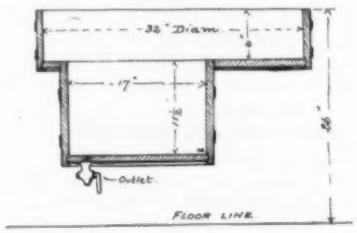


FIG. 1.

work, and is made up as follows:

Solution I.

Beta-naphthol	2 lbs.
Red Developer C	3¾ ozs.
Caustic Soda, 67° Tw.	2⅜ lbs.

dissolve completely, then dilute with:

Boiling water	1½ qts.

afterwards cooling with:

Cold water	1¼ qts.

The Red Developer C is a phenol-like body, probably alpha-naphthol. It is found in the market labelled Red Developer C or Shading Salt R.

Solution II.

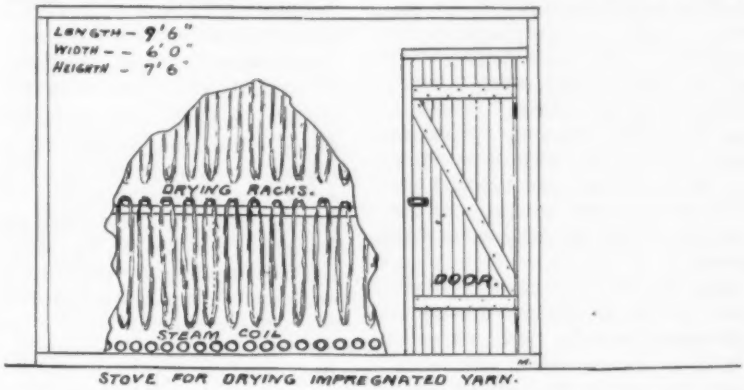
Dissolve 5¾ lbs. Castor Oil soap in about 11 quarts boiling water. When ready to commence dyeing, mix both solutions and dilute to 12 gallons, or 48 quarts, and for the charging of the dye vessel, use 10 quarts, through which pass 2 pounds of yarn, and for

each subsequent 2 pounds, add 1½ pints of the impregnating liquor. The temperature of the bath should not be allowed to rise above 110° F., an average temperature of 100° producing the best results.

After being impregnated, the 2 lb. bundles of yarn are squeezed, wrapped in clean cotton cloth, and whizzed for 10 minutes or so, then spread on sticks and dry at 150° F., for 3½ to 4 hours.

It is essential that a special drying stove or room be arranged. The following sketch (Fig. 2) shows one in actual use, easy to fill and empty, and can be cheaply constructed by any mill carpenter.

Such special stoves are desirable for this drying, because the yarn prepared with beta-naphthol must be dried where there are no acid vapors, which would cause great unevenness. Instead of having pipes on the floor of the chamber, a better, though slightly more expensive arrangement is to have a separate box for the steam pipes, around which the air is heated and forced into the stove by a small blower.



STOVE FOR DRYING IMPREGNATED YARN.

FIG 2.

The "Castor Oil Soap" above referred to is prepared as follows:

Stir together and boil for 1 hour
10 parts Castor Oil (1st pressings preferably).
10 parts Caustic Soda, 10° Tw.

Cool for about 5 hours, and decompose with the addition of 2¼ parts hydrochloric acid, 30° Tw., and boil for ½ hour; cool, and decant the top layer of oil, which is not a "soap" at all, but rather "ricinoleic acid." This can be thus manufactured by the dyer much cheaper, and of a better quality than by purchase.

The actual dyeing takes place during the developing, and the final result always depends upon the thoroughness of the impregnating and the drying. The developing requires a carefully prepared solution of diazotized paranitroaniline, and it is here suggested for dyers who may never have tried this process to make a preliminary experiment on a small scale, the quantities for which are indicated in brackets, so that the idea may be most readily understood without damage being done to a large lot.

Many dyers who have tried the process failed to produce good results, not on account of defective inpregnating, but by not having the developing somtion compounded properly.

Solution A.

Dissolve 1⅞ lbs. (1 oz.) Paranitroaniline in 1½ gals. (7 ozs.) Boiling Water, then add 1¾ qts. (2 ozs.) Hydrochloric Acid, 32° Tw.

Stir until solution is complete, and add 3¼ gals. (1 pt.) Cold Water.

This causes a more or less complete precipitation of the hydrochlorate of paranitroaniline as a yellow crystalline paste.

Allow to stand over night, and in the morning add a solution of 1⅛ lbs. (½ oz.) Cryst. Nitrite of Soda, dissolved in 3 qts. (3½ ozs.) Cold Water.

Stir continuously, and in about 10 or 15 minutes a clear solution results, which is diluted to 9½ gallons (43 ozs.) with (preferably) ice water, as the colder the solution is, the least liability there is of it decomposing.

Solution B.

Dissolve 4 lbs. (2 ozs.) Sodium Acetate in 11 qts. (13 ozs.) Water.

For developing, the same sort of tub is made use of as for impregnating, except that it should hold about 4½ or 5 gallons, into which is first poured 1⅛ gallons cold water and 14 lbs. Solution A, and 3½ lbs. Solution B, for the first lot of 2 lbs. of impregnated and dried cotton yarn, which is given two passages, in all about 1 minute or less, wring well, allowing the excess liquor to run back; replenish the liquor with 1¾ lbs. of Solution A, and 7 ozs. of Solution B, and continue with the remainder of 100 lbs. of yarn in 2 lb. batches.

After the entire lot has been developed, work in an ordinary dye tub in cold water, then in fresh water at 210° F., and once more in cold water, finally through a 2% ordinary soap bath and rinse.

As a matter of fact, the "secret" of the process is based only upon the temperatures of the various baths, and chiefly upon drying, and if these details are attended to, the dyer will always be able to turn out a fast red on cotton, which, owing to its peculiar properties will always command its price.

It is a fact not generally known among dyers that paranitroaniline red may be shaded with the direct or diamine colors, by adding the proper coloring matter to the impregnating bath, only topping the developed red, and if a proper selection of direct color is made, elegant discharge effects are to be easily obtained on piece goods.

The impregnating and developing of piece goods differs in no degree from the same processes as applied to yarns, except that the mechanical arrangements are such as would ordinarily be applied to piece goods, the object being to keep the fabrics spread to their full width during their passage through the solutions and drying stove. The printing of the discharge pastes follows the drying, after impregnation and developing.

DISCHARGE EFFECTS ON PARANITROANILINE RED.

These effects are of two kinds, white and colored. White discharges are easily obtained by using tin crystals, thus:

Wheat Starch ..... 4 ozs.
Ammonic Acetate, 16° Tw...8 ozs.

boil together, cool, and add

Tin Crystals ..... 5¾ ozs.
Citric Acid ..... ¾ ozs.

Stir well, until the tin crystals have completely dissolved, or dissolve the tin crystals previously in a small portion of the Ammonic Acetate. To make the actual discharge paste, take of the above mixture 10¾ ounces, and add 9 ounces of tin crystals. Print, steam lightly, and pass through a very weak muriatic sour at ½ to 1° Tw. Wash well, soap, and if deemed desirable, chlore.

Colored discharge effects are easily obtained, using the previously discharged paste as a base, and adding to every 15 lbs. thereof

¾ lb. Basic Dyestuff (according to shade).
2 lb. 6 oz. Acetic Acid, 11° Tw.

When dissolved, add

1½ lb. Dextrine Paste 1:1.

Stir well, cool, and add

2 lb. 6 oz. Tannin-glycerine.

Tannin-glycerine is very useful for compounding nearly all basic color discharge pastes, and is prepared as follows:

1 lb. Tannic Acid, dissolved in
1 lb. Acetic Acid, 11° Tw., then add
¼ lb. Glycerine, pure and concentrated, and
¾ lb. Water.

Print, steam, and pass through a fixing bath containing 1 lb. Antimony Salt to every 10 gallons of water; wash and soap.

"BETA-NAPHTHOL."

Fulling and Dyeing in One Operation.

A process which will interest manufacturers of satinets and union goods that are to be piece dyed, consists in combining the fulling and a part of the dyeing process, in one operation. When mixing up the fulling liquor, from 1 to 1½ per cent. of Diamine Milling Black B, reckoned on the weight of the goods to be dyed, is added, but it is not advisable to use less than 11 or 12 ounces of the dyestuff for each ten gallons of milling liquor. The goods are fulled in the usual way, in the ordinary fulling mill. One quarter of an hour previous to taking the goods from the mill, a solution of crystallized Glauber's Salt is added. After the goods are fulled, they are rinsed slightly, and then dyed in an acid bath. It is advisable to add from 10 to 15 per cent. of bisulphate of soda to the dye bath at the beginning, and enter the goods in the warm bath, and also avoid violent boiling. Messrs. Wm. J. Matheson & Co., show in their recent sample card, five samples of satinets colored very attractive shades, after being bottomed with a Diamine Milling Black in the fulling mill.

—The boiling and mordanting which dark dyed stuffs have undergone are great preservatives against mold, and light colored fabrics have not been so guarded, especially when there is much white wool in them. White or vat-dyed wool is far more likely to mold than that which has been boiled and mordanted. Mold marks on light goods chiefly take the form of dirty white or yellowish streaks, and the ordinary means of destroying them, such as the application of dilute acid at high temperatures, the so-called carbonizing, are inadmissible with such goods.

Bleaching with Peroxide of Sodium.

An essential condition for bleaching with peroxide of sodium, is that the wool should be perfectly clean, and free from foreign matter, before commencing the process of bleaching. The Moniteur de la Teinture gives the following as a good formula for bleaching:

121 lbs. of wool.
120 gallons of water—quite warm.
3½ lbs. sulphuric acid.
3 lbs. phosphate of ammonia.
3¼ lbs. peroxide of sodium.

The degree of alkalinity of the bath is an important factor in the success of the operation. In most cases, this must be regulated according to the quality of the articles to be bleached. If too alkaline after being prepared according to this formula, it can be remedied by the addition of phosphoric acid, and the proper degree of alkalinity is indicated by red litmus paper being slightly blued when immersed in the bath. It frequently happens that after the bath has been used an hour or so, the natural acidity of the wool neutralizes the liquor, when it is necessary to add a small quantity of ammonia. The bath should be allowed to stand 15 or 20 minutes before using, and the scum which forms on the surface should be carefully skimmed off before entering the yarn or cloth.

Dyeing Khaki.

A process for dyeing Khaki on cotton, which has recently been patented in this country, consists in impregnating the fibre with a mixture of viscose (cellulose sulpho-carbonate) and gas, wood or other tar. The mixture is applied by means of mangling or squeezing rolls. The goods are dried and then steamed for one or two hours at about 5 lbs. pressure. Boiling in concentrated brine for ten or fifteen minutes can be employed in addition to, or as a substitute for, the steaming.

The goods are then washed with a bleaching or oxidizing agent and finally dried and finished.

The process for wool consists in

impregnating the stock with the viscose and tar mixture, and then immediately immersing the wool in a solution of ammonium chloride in order to replace the caustic soda in the chloride by free ammonia. The wool is then boiled in concentrated brine and washed.

The inventor gives the following directions for making the viscose mixture: To one hundred pounds of viscose, containing ten pounds of dissolved cellulose, is added four pounds of gas-tar, and the whole is then thoroughly mixed. To this is added the ferrous or ferric hydrate in the wet precipitated form as obtained from ten pounds of ferrous sulfate (copperas) and also eight to ten ounces of primulin dye or other suitable dye previously dissolved in water. The whole is thoroughly mixed and made up to a total weight of two hundred pounds with water, if necessary adding a little caustic soda for the purpose of thinning the solution.

Test for Weight of Dye, Cotton and Wool in Textiles.

The following method has been adopted by the French Customs Department, to determine the percentage by weight of dyestuff, cotton and wool in mixed fabrics.

Three pieces of the sample are cut to exactly the same weight, say 100 grains. They are marked respectively A, B, C. A is kept for reference, whilst B and C are boiled for 15 minutes in a 3 per cent. solution of hydrochloric acid to remove impurities; they are then thoroughly washed several times and marked B_1 and C_1. The sample B_1 is then dried and weighed to ascertain the loss from impurities, and set aside.

Sample C_1 is next boiled for 15 minutes in a solution of caustic soda at a density of 102°, which dissolves the wool, leaving only the cotton, which is then marked C_2. Each sample being now dried for two hours, and afterwards left for 24 hours in the open air.

It will now be seen that A minus B_1 represents the amount of dye and sizing; B_1 minus C_2 equals the amount of wool, whilst C_2 represents the weight of cotton. It has, however, been found by experience that 5 per cent. should be added to C_2, as that amount of cotton has been carried away by the soda solution.

It will be found convenient to take exactly 100 grains of cloth to start with, as this gives a decimal basis by which the subsequent weights indicate readily the percentage of loss.

This method of dissolving the cotton by boiling in caustic potash or soda is best adapted for goods containing a large percentage of cotton.

Another test which answers well for fabrics containing but a small proportion of cotton is to place the sample in either nitric, hydrochloric, or sulphuric acid, and boil until all the cotton is dissolved; then wash, dry, and weigh. Concentrated sulphuric acid may be used cold, as in this state it has power to dissolve the cotton fibres without materially affecting the wool. Another method of removing cotton is to employ a solution of oxide of copper in ammonia, as this re-agent will dissolve cotton and silk, but not wool.

—The first mention of worsted in English official records, is found in the eighth year of Edward II. (1315), stating that a complaint had been made to Parliament against Norwich clothiers who were making worsted pieces twenty-five yards long and selling them as thirty, the regulation length.

—A skilful manufacturer will plan his line so that he can use up most of the seconds. One thrifty manufacturer, who makes a line of women's and infants' goods, utilizes almost every scrap of cloth knit on his machines, and what he cannot use in the infants' line, he makes up into rubber socks. It is by utilizing all these little points that profit is shown at the end of the year.

QUESTIONS AND ANSWERS

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc, we will charge the enquirer with the cost of the investigation.

Shoddy Mill Equipment.

Editor Textile World:

I would like to know the cost for equipping a shoddy mill with daily capacity of 3000 lbs.

Query (1).

The equipment of a shoddy mill varies largely with kinds of stock made. If goods are to be carbonized, the carbonizing apparatus will add largely to the expense, especially if one of the more elaborate systems of carbonizing is adopted, but this process can be conducted by means of the wet system with comparatively inexpensive apparatus, and on this basis we estimate equipment as follows:—

4 soaking tanks	$300.00
2 hydro extractors, $385	770.00
5 flat dryers, $160	800.00
1 lumber 48"	180.00
2 dusters, $250	500.00
4 pickers	900.00
8 sets 48" double cards, $750	6000.00
80 H. P. steam engine	2000.00
Boiler	1200.00
	$12,650.00

The above estimate is for new machinery, and does not include anything for buildings, tools and implements, or cost of setting up the machines. In addition to this outfit it might be desirable to add a garnett machine, although it is not required in the manufacture of shoddy. This machine costs from $1500 to $2500, with a capacity of 700 lbs. yarn waste per 10 hours.

Damage to Card Clothing by Water.

Editor Textile World:

A fire in our card room started the automatic sprinklers, and the cards were drenched with water. We have agreed on valuation of damage to the clothing. Will you give us your opinion as to a fair basis on which to adjust damage to the lagging? The cards are 60" wide, lagged with wood, and badly soaked, causing the wood to swell and spring out of shape.

Lag (15).

While it is of course impossible for one who has not seen the cards to form an opinion as to the actual damage to the lagging, we are inclined to think that if the wooden lags have been thoroughly soaked, their present value to the manufacturer is doubtful.

A card is a machine which must be very firmly and accurately adjusted in order to do good work, and any impairment of the solidity or alignment of the lagging impairs the usefulness of the card. In the case you mention it would probably be necessary to remove the clothing and turn the cylinder, workers, doffers and other rolls several times before they became as reliable as before the wetting. This involves time and expense, besides the damage from poor work made while they are out of true.

The loss of production is a large item, and in the end the lags will be much thinner, and their life greatly reduced.

The cost for relagging cylinders 60 inches wide would be about 75 cents for each inch of the diameter. Judging of the matter from this distance we would suggest that an allowance of from 50 to 60 per cent. of the cost of new lags in addition to cost of trueing up, might be taken into consideration as a fair allowance for the damage in case it is deemed best to use the old lagging.

But we can readily understand that the damage by water might be so serious as to warrant the mill owner in asking for the price of new lags.

Lustre on Satinets.

Editor Textile World:

Please explain the best process for giving a lustre to the face of satinets. Is there any solution that can be applied to the goods to cause nap to stay down when pressed?

Lustre (2).

We know of no such preparation. If the nap is raised and then well laid on the wet gig, the lustre will be much improved. The quality of the stock has much influence on lustre obtained.

Crepe Finish on Chiffon.

Editor Textile World:

Can you tell me how to finish chiffon with a crepe effect? Is it done with acid?

Crepe (3).

This crepe effect is produced on an em-

bossing machine in the same manner that ribbons are given the crepe effect, but of course with a different sized machine. The real crepe is woven with hard twisted filling in the gum, and finished on a block frame same as velvet.

Crochet Needles.

Editor Textile World:

We are in the market for quite a quantity of wooden crochet needles. Can you tell us who makes these?

Fleetwood (5).

Can anyone inform us? We do not know.—Ed.

Softener for Cotton Yarn.

Editor Textile World:

Will you give me a formula for a cheap and reliable softener for cotton yarn, with full instructions for use?

Reliable (4).

We refer our correspondent to our advertising columns, where he will find a number of firms handling cotton softeners, who will be pleased to furnish him with full particulars upon application.

Book on Fulling and Scouring.

Editor Textile World:

Where can I obtain a good book on the fulling and scouring of woolen piece goods?

Full and Scour (9).

We do not think such a book has been published. Information on this subject is obtained in the mill, and in addition to this experience, much valuable information can be obtained from the general works on woolen manufacturing, chemistry, etc., bearing upon the subject. Many valuable articles on fulling have been published in the Textile World, and this subject will receive in our columns the attention which its importance merits.

Book on Dry Goods.

Editor Textile World:

Is there any book on dry goods that describes the different classes of fabrics and tells something regarding their manufacture?

Thames (16).

Dictionary of Dry Goods, by George S. Cole, sold by Dry Goods Economist, will probably answer your purpose as well as anything we know of.

Manual of Dyeing.

Editor Textile World:

Is Knecht, Rawson & Loewenthal's Manual of Dyeing an up-to-date and modern work? Can an intelligent man with experience as workman in a dyehouse gain necessary information from which to become a practical dyer?

Dyer (8).

The Manual of Dyeing mentioned was an up-to-date work at the time it was published, a few years ago, and since its appearance no other work on dyeing as elaborate as this one, has been published. Reading this work will not make a man a practical dyer, but if one has had practical experience in the dyehouse, the book will be found of great value to him, as it contains a vast fund of information which every practical dyer should possess.

Bleaching with Peroxide of Sodium.

Editor Textile World:

What do you think of peroxide of sodium as a bleaching agent for cotton? Where may I secure full instructions for the process?

Sodium (10).

The process of bleaching with peroxide of sodium has been adopted in a number of mills with very satisfactory results on fine cotton goods, where more attention is given to maintaining the strength and quality of the goods than to securing a low cost. Peroxide of sodium cannot compete in price with chloride of lime. The cost of bleaching with peroxide is somewhat less than one cent per pound of cotton, depending on the preparatory treatment and quality of the fibre.

Full information as to its use can be obtained from the Roessler & Hasslacher Chemical Co., 100 William St., New York.

Mercerizing in the Piece.

Editor Textile World:

Can you give us the name of some concern who does mercerizing in the piece after weaving?

Bradford (11).

We believe the Sayles Bleachery at Saylesville, R. I., does this sort of work, and there are probably others, to whom we will furnish the address of our inquirer, if interested.

Worsted Wearing Shiny.

Editor Textile World:

When a worsted suit of cloth wears shiny, will sponging remove the shine?

Worsted (12).

Sponging will not remove the shiny appearance from worsted that has been caused by wear. This shine is due to the fact that the loose outside fibres have been worn off. The longer fibres which

lie parallel with each other, are thus exposed to, and reflect the light so as to cause the shiny appearance. In addition to this, the surface of the fibres has been worn smooth and bright by friction, and this increases the shiny effect.

Worsted fabrics, especially those made with long, coarse wool or hard twisted yarn, wear shiny easier than a woolen thread, because the worsted process of spinning brings the fibres parallel with each other. Woolen fabrics, if made with double and twist yarn, or from long, coarse stock twisted hard, will also become shiny if subjected to wear or friction. In fact, any wool or worsted fabric which is sufficiently durable to stand wear or friction, without going to pieces, will wear shiny. Sponging may have a slight but very temporary effect on woolen cloths which have been worn shiny.

Decoloration of Rags.

Editor Textile World:

In your July issue you mentioned a recent discovery of a process for decoloration of rags. Kindly inform me where I may learn something about this process.

Fleming (14).

In our September issue a further article on this subject appeared, and experiments are now being conducted in this country, and if results are satisfactory, will be published by us before long.

Unclean Woolen Goods.

Editor Textile World:

We have trouble in getting our woolen goods thoroughly rinsed. Why should soap left in the goods produce an odor?

Leslie (13).

In reply to our request, this manufacturer gave us very complete details as to his process of manufacture and finishing, and our views as to the cause of the trouble, and the probable remedy, will be found in the woolen department of this issue.

Machinery for Carbonizing Woolen Piece Goods.

Editor Textile World:

I would like to know of an up-to-date process for carbonizing woolen piece goods, and machinery necessary for the same.

Which is the better way to dry the goods, in a hot air box or over a set of drying cylinders?

Carbon (7).

The process of carbonizing piece goods and the chemicals used are the same as for carbonizing any other wool stock, and we refer our correspondent to the columns of the Textile World, where this subject has been very fully treated, and where it is still receiving attention. The machinery for carbonizing piece goods consists of a lead lined soaking tank. The goods are immersed in the liquor in this tank, and after a certain time necessary to get them thoroughly impregnated, they are extracted to remove the surplus liquor. This operation is greatly facilitated by having the extractor placed near the soaking tank, and a wooden roller suspended over the extractor. The end of the piece is drawn over this roller, and the cloth in this way is run into the extractor. A trough is constructed underneath the cloth to carry the drippings back into the soaking tank. The liquor which is extracted from the goods is carried to a centrifugal pump, and forced back into the soaking tank, thus saving a large amount of the acid.

After the goods have been thoroughly extracted, they are dried and baked. These two operations are generally conducted on the same dryer. The drying and baking operations can be carried on in an ordinary hot room, where the goods are suspended on hooks, or can be done on a cloth dryer. In either case a temperature of 190° to 200° F. is necessary, in order to thoroughly carbonize the vegetable matter.

As regards the comparative methods of drying woolen goods in hot box or over a set of drying cylinders, we think the hot air process is almost always used for heavy woolen fabrics, because both sides of the goods are exposed to the air, and the evaporation is thereby facilitated.

New Publications.

Calculations of Yarns and Fabrics, by Fred Bradbury. Guild & Lord, 620 Atlantic Ave., Boston, American Agents. Price $1.00; 211 pages; illustrated.

This work, as its title indicates, treats of the many calculations relating to yarns and fabrics, and, while giving rules and clear explanations, supplements them by examples taken from actual practice.

The first chapter is devoted to the various systems of yarn numbering and contains comparative yarn tables of the different systems in use, and methods are given for calculating the equivalent of any size by the other systems, and 24 practical problems are added.

Chapter 2 treats of the counts resulting from a combination of two or more threads of the same or different sizes, and 27 problems are included.

Chapter 3 is on the relative weights and cost of twist and mixture yarns, including boucle, corkscrew and other fancy yarns; 26 practical problems are given on this subject.

Chapter 4 is entitled, Weight and Cost

of Warps and Weft in Hank, Ball and Otherwise, and includes 16 problems illustrating the various questions likely to arise in practice.

Chapter 5 treats of the various systems of counting reeds and healds, and is accompanied by 20 practical problems.

Chapter 6 deals with the weights of warp and filling in fancy woven fabrics, the number of ends and weight of each color, and handles the complex problems with unusual clearness, and 18 questions are given to illustrate the subject.

The weight and cost of woven fabrics receives attention in chapter 7, and chapter 8 treats of calculations involved in the reproduction of woven fabrics. This branch of the subject is well handled and the problems given add much to the value of this chapter.

Chapter 9 is entitled Conditioning or the Standard Allowance of moisture on textile materials.

Chapters 10, 11 and 12 are devoted to the Construction of Woven Fabrics, and this subject usually treated in a manner too intricate for the average reader, is here stated fully and yet in language easily understood.

The whole aim of the book is to bring the subject right home to the mill manager and operative and will supply a need which the trade has long felt. It is a book which should be in the possession of textile workers for ready reference as the varied problems in mill work come up for solution.

While it contains much of value to the reader its greatest use will be as a book of reference and cannot fail to give new ideas to any who may study it.

It is pocket size, bound in cloth and indexed so that quick reference can be made to any subject.

Mr. Bradbury is an authority on textile subjects, and knows what is wanted in practical mill work.

The price includes postage and duty.

The Other Side, by Lyman Horace Weeks, National Publishing Co., New York. In this volume of 228 pages the author discusses the subject of trusts and trade combinations, and succeeds well in showing that there is another side to the question besides the one antagonistic to those combines which is at present so popular.

He discusses the pros and cons with fairness and its perusal would serve to sustain men from being carried too far in their opposition to all trade combinations which bear the name of trust.

Bulletin of National Association of Wool Manufacturers; Boston. The September issue of this publication opens with the address of Senator Aldrich, on the "Industrial Ascendency of the United States," followed by notes on the Dyeing Industry; chapters XI and XII on the New England Wool Manufacturer. The editorial and industrial department contains much interesting matter on subjects of interest. There is a quarterly report of the Boston Wool Market, also statement of wool imports and exports and decisions of the Treasury Department on the wool and woolen tariff.

The Credit Man; The Credit Man Co., New York. This is the first issue of a publication devoted to the interests of the credit man. It is of convenient size adapted to the pocket of the busy man. We wish it success.

Color Card List.

Diamine Colors on Cotton Yarn; Wm. J. Matheson & Co., New York.

This is an elaborate sample card of diamine colors, showing 105 shades on cotton yarn. Formulas and directions for dyeing are given, as well as the properties of the various dyes.

Farbenfabriken vorm Fred Bayer & Co., have issued a circular on the two new cotton dyestuffs, Alizarine Black K S W and K T G. Full particulars as to method of dyeing are given:

Diamine Dark Green N; Wm. J. Matheson & Co., New York. This is a card showing 12 shades colored with Diamine Dark Green N, on cotton yarn, Beverteen, cotton piece goods, satin, unions and loose cotton, and giving directions for dyeing.

Immedial Blacks on Gray Shade; Wm. J. Matheson & Co., New York. A card showing four shades printed with Immedial Black; also directions for mixing and printing.

Irisamine G; Wm. J. Matheson & Co., New York. A card showing shades, made with Irisamine G on yarn and piece dyes and printed goods.

Diamine Milling Black B; Wm. J. Matheson & Co., New York. This is a card showing samples of union cloth before fulling, and after being fulled and dyed in one operation with Diamine Black and other dyes.

Benzo Nitrol Bordeaux C; Farbenfabriken, New York. This card shows two samples colored with this additional brand to the Benzo Nitrol series.

Alizarine Brown K C 5 G; Farbenfabriken. A card with four shades dyed with this new brand of sulphide colors.

Immedial Brown B; Wm. J. Matheson & Co., New York. This is a card showing 35 samples of cotton yarn, raw stock and piece goods, including mercerized goods, suitings, drills, moleskin and velveteens. The brown shades are produced with the Immedial Brown B alone, also by combination with other dyes and treated with chrome and sulphate of copper.

Industrial News.

—Perhaps the largest order for imported machinery placed since the American Thread Co.'s order for Tweedales & Smalley's machinery, through H. G. McKerrow & Co., is that recently placed for the new Baltic Mill for their card room machinery, through Evan Arthur Leigh, for Platt Bros., machinery.

Philadelphia Drying Machinery Co.

The Southwark Mills Company, of Philadelphia, one of the oldest established and best known among the trade, have recently placed an order for a large automatic continuous machine for drying and carbonizing piece goods. It will contain all the latest improvements used in carbonizing this class of material, and as it will be built by the Philadelphia

Drying Machinery Company, 6721 Germantown Avenue, Philadelphia, it is needless to say that the machine will be thoroughly up to date in every respect. The latter company have also received a number of large orders recently for their well known Hurricane dryers for skein yarn and raw stock

Change in Selling Methods.

The following letter has been addressed to the trade by the New England Cotton Yarn Co:—

New Bedford, Mass.

Dear Sir,—

We beg to announce that on and after October 1st, our entire product will be offered direct to the trade through our own offices by our own salesmen.

In changing the method of selling our product, our sole object is to bring the manufacturer and his spinner in closer relationship.

With this arrangement and its resultant economies, we are confident we can offer the trade every advantage consistent with good business principles.

Prompt quotations, immediate adjustment of differences, individual attention to all the minor details, we cannot but feel will merit patronage.

Kindly note the list of offices as given below.

Appreciating the consideration our product has had in the past, and trusting to merit your favors in the future, we remain, Yours truly,

New England Cotton Yarn Co.

Offices:—Albany, Mr. E. A. Vaughn, 38-40 State St.; Boston, Mr. J. B. Jamieson, 77 Bedford St.; New York, Mr. P. H. Corr, 346 Broadway; Philadelphia, Mr. E. Lovering, 213 Chestnut St.

The Atlas Foundry in New Works.

The Atlas Foundry & Machine Co., which have for half a century been located at Newark, N. J., are now located in their new shop at Bellville, N. J. It is no small matter to move a machine shop, but the task is now successfully accomplished, and they are getting under way as fast as possible, and by the middle of October will be ready to fill all their orders promptly. In establishing themselves in their new quarters, every opportunity for improved arrangement to facilitate work has been prevailed upon, and the shop is equipped better than ever before for their purposes.

This business was established in 1844 by the late S. R. Parkhurst and a company incorporated in 1895. It was re-organized early this year, and W. H. Hassett, who has for many years been connected with the concern, still remains as manager.

Their line of machinery includes burr pickers, metallic rolls, mixing pickers, picker and card feeds, dusters, side drawing, etc.

Howard & Bullough American Machine Co.

This company is exceedingly busy with orders and still continues to run night and day forces in order to keep up with the demands made upon them. They have very large contracts in hand for many of the leading mills in the North among which are the Amoskeag Mfg. Co., Manchester, N. H.; Hope Co., Hope, R. I.; American Thread Co., Willimantic and Hadley branches; Ashton Cotton Mills, Jewett City, Conn.; Manville Co., Manville, R. I.; Tremont & Suffolk Mills, Lowell, Mass.; Border City Mfg. Co., Fall River, Mass.; Lawton Spinning Co., Providence, and many others. They are at present making extensive additions to their power plant, putting in new generators and installing another engine, also adding to their present battery of boilers.

The California Cotton Mills Co., East Oakland, Cal., have just placed a repeat order for Picking Machinery with the Howard & Bullough American Machine Co., Pawtucket.

The Wilkes-Barre Lace Mfg. Co., Wilkes-Barre Pa., who are making extensive alterations and additions to their present plant, have placed their order with the Howard & Bullough American Machine Co., who are supplying them with Revolving Flat Cards, Electric Stop Motion Drawing Frames, Slubbing, Intermediate and Roving Frames.

They have a repeat order for revolving flat cards from the Border City Mfg. Co., Fall River Mass., also a large order for electric stop motion drawing frames from the Manville Co., Manville, R. I.

The Lincoln Cotton Mills, Lincolnton, N. C., have just finished the installation of additional picking machinery from the American Machine Co., and the Nokomis Mills, Lexington, N. C., expect soon to have their buildings completed and ready for the machinery, the whole of which is to be furnished by the Howard & Bullough Co.

Babcock & Wilcox Boilers at Paris.

That these boilers are appreciated abroad as well as at home is shown by the Grand Prix having been awarded to them at the Paris International Exposition.

Silica-Graphite Paint.

The fall of the year, which is free from the heavy rainfalls of spring and the dust storms of mid-summer, is a good time to test the merits of Dixon's Silica-Graphite paint by applying it to the buildings in need of paint.

If applied in the fall, it has time to thoroughly harden before being exposed to the heat of the summer sun. This Silica-Graphite paint has been in use for over 30 years, and its manufacturers state that some surfaces covered with it, have not required repainting in 10 or 20 years. Manufactured by Joseph Dixon Crucible Co., Jersey City, N. J.

—The town of Boulder, in the new gold fields of West Australia, was recently equipped by the B. F. Sturtevant Co., of Boston, Mass., with generating sets for lighting and power purposes and electric motors for operating hoists, etc., in the mines.

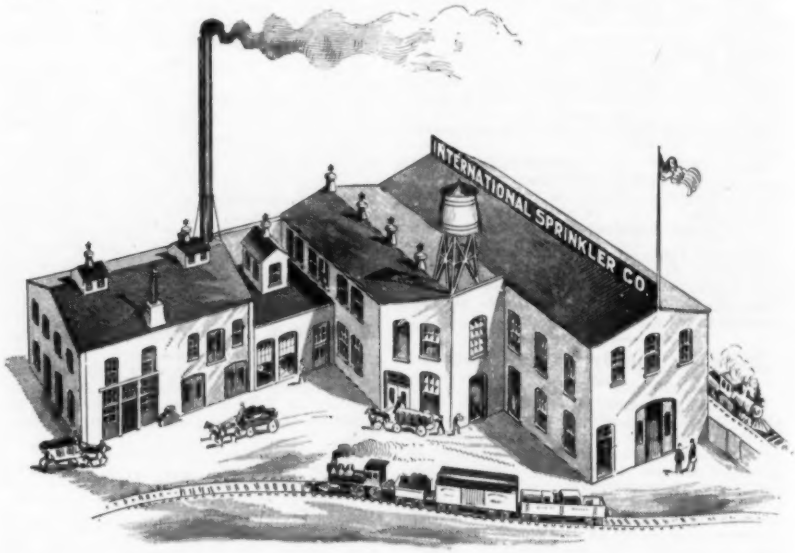
—The Lewiston Machine Co., Lewiston, Me., has recently presented to the Lowell Textile School, one side cam and one bag loom.

New Factory of International Sprinkler Company.

The illustration shows the modern factory of the International Sprinkler Co., Washington Ave., Philadelphia, Pa., which has just been completed and put in use in Philadelphia. It is a very complete plant, which enables this company to handle a very large tonnage of pipe, fittings, and all other accessories to the sprinkler business. Their facilities are now second to none in this line of business.

This company is controlled and managed by Merchant & Co., Inc., of Philadelphia. Its main office is at Philadelphia, and its Southern office in the Prudential Building, Atlanta, Ga., but all representatives and branch offices of Merchant & Co. Inc., can be applied to for particulars.

Everyone interested in protecting property against fire loss is invited to



communicate with this company or its representatives for full information on Sprinkler protection. Copies of insurance approvals of its devices, and credentials from representative concerns over the country as to the excellence of the International Company's work will be furnished with pleasure to prospective customers. This company has an energetic management, abundant capital, and is in the sprinkler business to stay.

The following partial list of contracts taken in the last few months, covering a wide range of buildings protected by every class of insurance, affords ample proof that the International Company is getting its share of the sprinkler business in the country to-day.

PENNSYLVANIA.

Electric Storage Battery Co. (mfr. storage batteries), Philadelphia.
Leicester & Continental Mills Co. (woolen mills), Philadelphia.
John Wolstenholme & Sons (mfr. worsted yarn), Philadelphia.
Hotel Walton, Philadelphia.
Quaker City Dye Works, Philadelphia.
Hensel-Colladay (repeat order) (woolen mills), Philadelphia.
Smith, Kline & French Co. (drugs), Philadelphia.
William Steele & Sons (Peter Woll) (repeat order), Philadelphia.
Estate C. J. Graham, Philadelphia.
Robert Foerderor (mfr. of leathers), Philadelphia.
George W. Smith & Co. (cabinet makers), Philadelphia.
National Publishing Co., Philadelphia.
Ashley & Bailey Co. (mfr. of silk), York.
Nolde & Horst (knitting mills), Reading.
John Gay's Sons, Philadelphia.
Tutleman Bros. & Faggen, Philadelphia.
Germantown Spinning Co., Philadelphia.
Bernstein Mfg. Co. (mfr. metal bedsteads), Philadelphia.
Peter Woll & Sons, Philadelphia.
Greaves Bros., Philadelphia.
Marks Bros. (repeat order) (department store), Philadelphia.
John T. Bailey & Co. (mfr. bags, rope & twine), Philadelphia.
J. Kitchenman (mfr. carpets), Philadelphia.
George Lasher, Philadelphia.
Enterprise Mfg. Co. (mfr. hardware specialties), Philadelphia.
R. T. Moorhouse (mfr. of paper), Philadelphia.
Pennsylvania Salt Mfg. Co. (mfr. of chemicals), Natrona.
J. S. Thorne, Philadelphia.
J. R. Jones, Philadelphia.
Dornan Bros. (mfr. carpets), Philadelphia.
Millbourne Mills, Philadelphia.
W. C. Urner & Co., Spring Grove.
Hess's Mills, Philadelphia.
Thomas Miles Building (office building), Philadelphia.
T. B. Rice (repeat order), Philadelphia.
Standard Hosiery Co., Philadelphia.

George Watkinson & Co. (mfr. rubber boots and shoes), Philadelphia.
Dill & Collins, Philadelphia.
Lehigh Valley Silk Mills, Copley.
Cambria Steel Co. (mfr. steel), Johnstown.
Otto Gas Engine Co. (mfr. gas engines), Philadelphia.

NEW YORK.

Buffalo Forge Co., Buffalo.

CONNECTICUT.

Coe Manufacturing Co., Torrington.

NEW JERSEY.

Crescent Belting & Packing Co. (repeat order) (mfr. rubber goods), East Trenton.
Philadelphia Watch Case Co. (T. Zerbrugg Co.), Riverside.
Riverside Metal Co., Riverside.
Millville Mfg. Co. (cotton mills), Millville.

MARYLAND.

Sharpe & Dohme (drugs), Baltimore.
Am. Tobacco Co. (Teigner Branch), Baltimore.

DISTRICT OF COLUMBIA.

Stumpf Bedding Co. (mfr. metal bedsteads), Washington.

VIRGINIA.

Cotton Oil & Fibre Co., Norfolk.

NORTH CAROLINA.

Patterson Textile Co. (cotton mills), Roanoke Rapids.
Roanoke Mills Co. (cotton mills), Roanoke Rapids.
Ashley & Bailey Co. (mfr. silks), Fayetteville.
Nokomis Cotton Mills, Lexington.

SOUTH CAROLINA.

Buffalo Mills (cotton mills), Union.
Chesswell Cotton Mills (cotton mills), Westminster.
Capital City Mills (cotton mills), Columbia.
Laurens Furniture Co., Laurens.
Morgan Iron Works, Spartanburg.
Spartanburg Warehouse Co., Spartanburg.

TENNESSEE.

Harriman Cotton Mills, Harriman.

TEXAS.

American Cotton Spinning Co., Denison.
Roxton Cotton Oil Co., Roxton.
McKinney Cotton Oil Co., McKinney.

Warren's Pulley Cover.

The Warren Mfg. Co., of Chicago, manufacturers of Warren's Pulley Cover, (applied with a brush), has recently published an entertaining and well printed folder, describing the use and merits of its cover. This cover, it seems, gives a pulley a leather-like surface, which has natural adhesion for belting. In this folder is set forth the idea that metal pulleys and leather belts have no natural affinity for one another and therefore were not intended to work together. The belief is expressed that man by making his pulleys of metal and his belts of leather has attempted to force metal and leather to an unusual union and thus has fought natural laws, that he has necessarily met with a failure. The result of this failure is, of course, belt slipping or belt creeping, with a material loss of power and capacity. Anything that tends to stick the belt surface to the pulley surface will tend to increase the resistance to be overcome by the engine. The company will submit further information to all interested. This should include all users of belts.

Sales in France.

Charles Cooper has recently sold six of his latest patent knitting machines to parties in Bordeaux, France, to be placed in a knitting mill in that city. They will be shipped next month, and William A. Barratt will go to France, to put them in proper running order. Mr. Barratt will be absent about six weeks.

A New Dye Stick.

The attention of manufacturers and dyers is directed to a new dye stick which has recently been brought out by Frank Bailey of Cedar Brook, Camden Co., N. J., and which has met with great success in the trade wherever used. It is for the Klauder-Weldon dyeing machine, and where alizarine colors are employed, its advantages are very great. The stick is larger than the former style, and being made of poplar, instead of maple, its weight is not increased; indeed, is somewhat lighter. Poplar is a better wood for this purpose than maple, as the latter absorbs water and is apt to become heavy. Being larger, it gives much better circulation of the liquor, which gives a more uniform shade. It also has a tendency to prevent the skein from catching on the inside stick and becoming entangled, and yet the skein can be run slacker.

These sticks have been introduced in many dyehouses throughout the Middle States, and Mr. Bailey has recently been taking a trip through the East, where he has taken many orders from those who have seen it, among them being the Saranac, National and Providence and Riverside of the American Woolen Co., James D. Minto, Livingstone Mills, Earnscliffe Worsted Mills, Lippitt Woolen Co., Harrison Yarn and Dyeing Co., and R. Wolfenden & Sons, Simeon & Kirkaldy, Dunn Worsted Mills, Perseverance Worsted Mills, and others.

In addition to this new specialty, he makes all kinds of dye and kettle sticks, dry and sulphur house poles, poplar sticks for the Lorimer machine, also sticks to suit the Wolstenholm machine from natural water grown cedar.

Mr. Bailey has been in this business for a number of years, during which time it has shown constant growth, and he now counts among his customers many of the largest and best mills in the country.

Wm. H. Ireland.

Wm. H. Ireland, formerly New England agent for Wm. Browne & Sons, and the Phoenix Mills, Philadelphia, has formed a connection with Solis & Co., 620 Atlantic Ave., Boston, brokers in yarns, tops, wool, noils, etc.

Richman, Foley & Watkins, Ltd.

J. D. Watkins has been admitted to the firm of Richman & Foley, manufacturers of scouring salts, wool bleach and fast wool mordants, 235 North Front Street, Philadelphia, Pa., and the new firm will be Richman, Foley & Watkins, Ltd.

Mill Sewing Machines.

Although it may not be generally known, Messrs. Birch Bros., Somerville, Mass., are probably the largest builders of mill sewing machines for the dye house, finishing room and bleach house. They build a very heavy and strong machine, designed to sew any fabric of any thickness, wet or dry, free from puckering. It works equally well on cotton, woolen, linen, worsted and silk fabrics. They carry these machines in stock ready for immediate delivery, and have a special circular descriptive of them, which they are pleased to send upon application.

This firm manufactures a very extensive line of machinery of all kinds, for bleachers, dyers and finishers of cotton, wool and worsted.

Direct Returns.

As an instance of direct returns from advertising, the Burt Mfg. Co., of Akron, Ohio, report that they are crowded with orders as the result of an illustrated notice of their Burt Exhaust Head, which they have only recently commenced to advertise.

"Any article of merit," said Mr. Warden, manager of the company, "can be pushed successfully through judicious advertising in the trade journals, as we have demonstrated, to our own satisfaction, at least."

—The Jeffrey Mfg. Co., of Columbus, O., have recently issued a new illustrated chain catalogue, which may be had upon application by interested parties. This concern makes all sorts of elevating and conveying machinery for labor saving purposes, and also are very large manufacturers of power transmitting machinery, and can quote very close figures for general mill equipment.

B. F. Sturtevant Co.

The rapid growth of the export business of the B. F. Sturtevant Co., of Boston, Mass., manufacturers of blowers, heating and drying apparatus, engines, forges, electrical equipment, etc., is well exemplified by recent foreign orders for forges which aggregate 200 for Japan, 75 for Russia, 40 for Germany, 32 for Canada, and 24 for Sweden, in addition to large numbers distributed through its London and Continental stores. Domestic demands have likewise increased in the same line during the past few months, large forge equipments having been furnished to several shipbuilding and locomotive shops in the United States. The manual training, trades and technical schools have also been placing some large orders with this company.

A New Mercantile Agency an Assured Fact.

Attention is called to the advertisement of the National Mercantile Agency. The forty-fifth volume of the Credit "Blue Book" published by the National Mercantile Agency, has been received. It marks the maturity of plans, begun a year ago, to fully develop a system of credit reports proved by twenty-four years of experience in special branches of trade to be of great value. The system rests upon the essential principle governing credits; but, nevertheless it has been practically ignored by the general agencies.

For that reason, the National Mercantile Agency was organized in order to adapt to the entire mercantile field a system of great excellence hitherto limited to special fields. The plans proposed were presented to and approved by a number of prominent business men and capitalists. A cash capital of $500,000 was subscribed and paid in; and the following strong Board of Directors was elected: John W. Ealy, President of Company, New York City; Hon. Benj. F. Tracy, ex-Secretary of Navy, New York City; Marshall S. Driggs, President Williamsburg City Fire Ins. Co., New York City; John G. Jenkins, President First Natl. Bank, Brooklyn, N. Y.; Charles D. Marvin, of A. M. Kidder & Co., Bankers, New York City; Thomas F. Goodrich, Vice-President National Surety Co., New York City; James B. Gordon, Vice-President of Company, Boston, Mass.; Willis T. Gridley, Secretary and Treasurer of Company, New York City; Leonard H. Groesbeck, Cashier Third National Bank, Syracuse, N. Y.; J. Stanley Moore, Syracuse, N. Y.; John B. Green, Westfield, N. J.

These gentlemen being for the most part concerned in large financial enterprises, and therefore very practically interested in establishing credits upon a sound basis, undertook to develop from existing special agencies, which had been highly successful, a general mercantile agency of the first rank, whose prime purpose should be to report upon the character and business ability of applicants for credit, and the experience of merchants with such applicants. Financial ability is but one of the elements of sound credit. What credit men want to know concerning an applicant for credit is—What is he worth? How does he pay his bills? What is his business record? It is to develop information of this sort that the National Mercantile Agency was organized, largely for the reason that information as to character and business record has hitherto not been easily obtainable. Several special agencies have developed with great success, a system of interchange of experience amongst the merchants and bankers. It has been clearly shown that the information so gathered, if systematic and complete, is by far the best basis for credit ratings.

The "Blue Book" was originally solely devoted to the hardware and metal trades. Volume forty-five, recently issued, has been so expanded that it includes practically all the important lines of trade. It contains about one and a quarter million names covering the textile mills clothing, dry goods, grocery, drug, jewelry, stationery, crockery,

leather, rubber, lumber, tobacco, furniture and carpet trades, in addition to hardware and metal trades with which it was originally concerned. The publication therefore, takes rank as to scope and size with those of the general agencies, previously in existence, and in the character of the information given by it, it stands alone. It differs from other rating books in that it rates the paying qualities as distinguished from the credit ratings, used by other agencies. It tells how merchants pay as well as what they are supposed to be worth, and it gives in concise form the experience of sellers who have previously granted credits. Knowledge of this kind is valued by credit men above all other, and is in effect the main object of credit men's associations, and the main element which wholesale merchants seek to gain knowledge of by mutual inquiry from each other.

The National Mercantile Agency systematizes this desultory mutual inquiry, and extends it all over the country by means of its "Tracer System" whereby the business record of an applicant for credit, is gathered from every source, and the results presented in concrete form to those who wish to learn them. That such a system, if fully matured under the direction of practical business men, and supported by adequate capital is a valuable one, is self evident. The latest "Blue Book" shows how fully the National Mercantile Agency has developed it.

Edgings for 1901.

Messrs. G. A. Schneebeli & Co., of Nazareth, Pa., are now showing their line of lace edgings and braids for knit underwear for the spring of 1901.

Let a vest be ever so well made, if it is not attractively trimmed, it fails to please the critical woman purchaser. Perhaps no one point in the get-up of a line of ladies' and misses' goods is so important as the edgings. Instinctively the buyer is attracted by dainty, stylish and tasteful trimmings; they sell the line quicker than anything else. We have seen a good, reliable, well made garment of splendid value passed by because it was trimmed with some clumsy, old-fashioned or unattractive edgings and braids, and an inferior garment chosen because it had the "air" which attractive trimmings give.

The large manufacturers of these lace edgings employ skilled designers to produce the most attractive patterns possible, and some of their creations are really beautiful. Some manufacturers have the good taste to select the best, but all have the opportunity to do so and should improve it. G. A. Schneebeli & Co., are one of the largest concerns in the business, and their spring line for 1901 should not be overlooked. It is unusually attractive and contains many new effects, especially in mercerized, while their large capacity enables them to make prompt deliveries.

American Bridge Co.

The American Bridge Company announce that Mr. August Ziesing has been appointed as the general western representative of the company, with headquarters at Chicago, Ill.

Mechanical Ventilation.

The particular features of the Blower System of mechanical ventilation and heating are thus summarized in a recent lecture by Walter B. Snow of the engineering staff of the B. F. Sturtevant Co. Boston, Mass.

"The entire heating surface is centrally located, enclosed in a fire-proof casing, and placed under the control of a single individual, thereby avoiding the possibility of damage by leakage or freezing incident to a scattered system of steam piping radiators. The heater itself is adapted for the use of either live or exhaust steam, and provision is made for utilizing the exhaust of the fan engine, thereby reducing the cost of operation to practically nothing. At all times ample and positive ventilation may be provided with air tempered to the desired degree. Absolute control may be had over the quality and quantity of air supplied. It may be filtered and cleansed, heated or cooled, dried or moistened at will. By means of the hot and cold system, the temperature of the air admitted to any given apartment may be instantly and radically changed without the employment of supplementary heating surface.

"The pressure created within the building is sufficient to cause all leakage to be outward, preventing cold inward drafts and avoiding the possibility of drawing air from any polluting source within the building itself. By returning the air, using live steam in the heater and operating the fan at maximum speed, a building may be heated with great rapidity, as is usually desirable in the morning.

"The area of heating surface is only one-third to one-fifth that required with direct radiation, while the primary cost and operating expense of a fan is far less than that of any other device for moving the same amount of air."

Awarded Grand Prize.

The Textile World's exhibit at the Paris Exposition in the Publishers' Section, has been awarded a Grand Prize. The Textile World's Directory also received the award of grand prize.

—Mr. O. W. Russell, for a number of years in charge of the advertising for the Link-Belt Machinery Co., Chicago, Ill., has recently resigned to enter the employ of the Dodge Mfg. Co., at Mishawaka, Ind., in a similar capacity.

Universal Winding Co.

The Universal Winding Co. has made remarkable progress in the last few years in the introduction of their system of winders. No better evidence of the increase of their business can be shown than by the expansion of their necessary office facilities. Their requirements have outgrown their quarters at 226 Devonshire St., and on October 1st they removed to new quarters at 95 South St., where their offices occupy the entire floor.

—The Montreal Cotton Co., Canada, have received the Grand Prix for their exhibit of goods at the Paris Exposition.

Textile Patents.

(Continued from page 587.)

Measuring, Marking and Rolling Machine, Cloth. 657,428. R. Livingston and Wm. Rodger, Dysart, Scotland, assignors to said Livingston, W. J. Normand, Edinburgh, and Patrick H. Normand, Aberdour, Scotland.

Mercerizing. 657,849. H. E. Aykroyd, Ilkley, and Paul Krais, Bradford, Eng.

Mercerizing Machine. 657,705. T. McConnell, Chester, Pa., assignor to the Hampton Co., Easthampton, Mass.

Reed, Universal Warping. 658,104. H. C. Dreyer, Wilkes-Barre, Pa.

Scutching Machine. 657,023. C. J. Dear, London, Eng.

Spinning and Twisting Frame. 658,154. A. Mason, Raynham, Mass.

Spinning Spindle. 658,597. C. E. Smith, Fall River, Mass.

Steamer, Chainless Continuous Fabric. 657,362. E. A. Rusden, Warren, R. I.

Wool Degreasing Apparatus. 656,695. M. A. Jacques, Salome, France.

Wool Drying Apparatus. 658,106. T. Ender, A. Kleindienst, and J. Procner, Pabinize, Russia.

Woven Fabric. 657,940, 658,181. R. Johnston, Philadelphia, Pa.

Woven Fabric. 658,292. Wm. M. Stevenson, Springfield, Mass., assignor to Hodges Fibre Carpet Co., same place and Portland, Me.

Woven Fabric. 658,293. Wm. M. Stevenson, Springfield, Mass.

—Among the members of the National Association of Manufacturers attendant at the Paris Exposition, as members of the excursion arranged under its auspices, were Messrs. M. A. Furbush of the M. A. Furbush & Son Machine Co., and James Butterworth of the H. W. Butterworth & Sons Co. of Philadelphia. At a meeting of the party held in rooms of the American Chamber of Commerce, Mr. Furbush acted as secretary, and resolutions were passed expressing the approval of the disposition of the arrangements that had been made for the Association while attending it.

Silver Medal to Bristol Co.

The Jury of Award at the Paris Exposition have granted the Bristol Company of Waterbury, Conn., a silver medal for their exhibit of recording electrical instruments, and have also given honorary mention for their recording steam and pressure gauges.

American Cotton Yarn Exchange.

When, some three years ago, Mr. Arnold B. Sanford established the American Cotton Yarn Exchange as direct selling agents from manufacturers to consumers, his idea was looked upon askance by many in the trade. Experience has proved, however, that there was a field for this business, and from small beginnings, it has grown until it has been found necessary to open offices in New York. These have been secured in the Wool Exchange Bldg., and Mr. Warren R. Bannister, a gentleman well known to the New York City trade, will be the agent in charge. He will also cover Philadelphia and vicinity. Mr. L. W. V. Groat has also been appointed agent for the knitting district of New York State. Mr. Groat will make his headquarters in Amsterdam, and will cover that city, as well as Cohoes, Waterford, Troy, Utica and Little Falls. Both these appointments are necessitated by the increase of business and number of new accounts. The plan upon which the Exchange is conducted is to bring the seller and buyer in direct contact with each other, so that the mill is really selling direct. We understand that the mills which they are selling for are well pleased with the arrangement, and the growth of the business is the best evidence of its success.

The Pancoast Ventilator.

Among the sales of the Pancoast ventilator to textile mills lately are Clinton Cotton Mills, Clinton, La.; Wadesboro Cotton Mills Co., Wadesboro, N. C., Holt-Morgan Mills, Fayetteville, N. C., Ida Yarn Mills, Laurel Hill, S. C.; Richmond Cotton Mills, Laurel Hill, S. C., Springfield Cotton Mills, Laurel Hill, S. C.; Lowell Cotton Mills, Lowell, N. C.; Camden Cotton Mills, Camden, S. C.; Fulton Bag & Cotton Mills, Atlanta Ga.; Franklinville Cotton Mills, Franklinville, N. C.; Ezra Lund, Landenburg, Chester Co., Pa.; F. & H. Fries Woolen Mills, Winston-Salem, N. C.; Atlantic & Gulf Mills (cotton and yarn mills), Quitman, Ga.; and Cochran Cotton Mills, Cochran, Ga.

The ordinary observer cannot tell much about a ventilator by looking at the outside of it. It is the inside plan that makes it efficient, and the design of the Pancoast is such that its merits impress anyone who looks into the subject of ventilators. It is absolutely stormproof; prevents any down draft; permits no rain to get in; whichever way the wind blows it creates an up draft; and there is always a free and full draft. They adapt the ventilator for all sorts of factory purposes, and have been most successful in this line of work.

J. B. Jamieson.

J. B. Jamieson, for the past eight years in charge of the yarn department of Abegg & Rusch, New York, has accepted the position of general selling agent with the New England Cotton Yarn Co. His office will be at 77 Bedford St., Boston, Mass.

Bargain in Wool Mixed Stock.

Attention is called to the advertisement in another column of the bargain offered by the Hudson Fibre Co. of Hudson, N. Y. They have one of the latest improved garnetting plants in this country, and make a specialty of preparing all kinds of textile stock. Many of the lots they are offering today are lower in price than cotton. Samples, with prices, will be forwarded by addressing the company. We have recently seen some samples of yarn made from their stock sold at 8 cents per pound which were surprisingly good.

MILL NEWS.

Cotton.

New Mills.

—*Alabama, Anniston. It is expected that the Woodstock Cotton Mill, which is now awaiting arrival of machinery to be installed, will be put in operation in November. This plant will manufacture yarns.

—*Alabama, Athens. Work is now well under way on the factory of the Athens Cotton Mill Company.

—*Alabama, Barker. Operations are expected to be started at an early date in the Barker Cotton Mills, of which Geo. G. Barker is president. As previously reported, this mill, which is equipped with 20,000 spindles and 600 looms, will manufacture sheetings, drills and yarn.

—*Alabama, Huntsville. The Madison Spinning Company will soon be ready to receive bids for construction of building in which to install their new spinning plant. Some of the machinery has already been received.

—*Alabama, Huntsville. The Lowe Manufacturing Co. has now been organized with J. Harper Poor (New York), president; W. I. William (Huntsville), vice-president; Geo. P. Grant, Jr. (Fitchburg), secretary and general manager, and Arthur H. Lowe (Fitchburg), treasurer. Contract has been awarded to Geo. B. Hinman for the construction of the mill. This mill will have an equipment of 10,000 spindles for making fine cotton yarns.

—*Alabama, Opelika. The Opelika Cotton Mills are nearly completed. The machinery, which has all been purchased, is now being installed. It is expected to have the plant in operation November 1st.

—Alabama, Talladega. A new yarn mill, costing about $500,000, is to be built at Thorn Hill, about 3 miles south of this place, by Col. J. M. Lewis of Baltimore, and D. L. Lewis of Sycamore, who is interested in a mill at that place. It is stated that the plant will contain 20,000 spindles.

—Arkansas, Camden. The Ezell Stave Co. are looking up the subject of cotton machinery, presumably with the idea of the erection of a cotton mill, if results justify it.

—*Connecticut, Baltic. The Baltic Mills are rapidly receiving machinery. The spinning mill is 500 by 68, five stories high, and will contain 70,000 spindles, of which 50,000 will be mule spinning. They spin from Sea Island and Egyptian cotton, and the average numbers will be 100's. The roof is being put on the weave shed, which covers 2½ acres.

—*Connecticut, East Hampton. The brick work on the Starr Bros. Net & Twine Co.'s new plant, has been completed.

—Georgia, Canton. It is expected that the Canton Cotton Mills will be completed in about a month, when the machinery, which has already been ordered, will be installed. Full data was given in a previous issue, concerning this enterprise.

—*Georgia, Carlton. $100,000 has been subscribed for the Carlton Mfg. Co. It is expected to begin production in July next. The building will be of brick, one story high. The brick is now being burned. They intend to make sheeting and yarn and start with 3000 spindles.

—*Georgia, Columbus. The Southern Wadding Mill, which has sold its right to make wadding to the Union Wadding Co. of Pawtucket, but still retains the building, will doubtless be used for a yarn mill in the near future. The exact kind of yarn that will be made by this concern is not known, but the matter is now being discussed by the owners of the property, and in all probability a yarn plant will be installed in the building. E. N. Clemence is the vice-president.

—*Georgia, Eatonton. The Eatonton Electric Co.'s new mill is now in operation. This concern, of which J. W. Preston is president and E. M. Brown, treasurer, will manufacture unbleached sheetings and shirtings, with equipment as previously reported. Goods are to be sold through Haines & Bishop, 70 Worth St., New York.

—*Georgia, Eatonton. Work will begin at once on construction of the Middle Georgia Cotton Mills, a new organization of which Benj. W. Hunt is president. It is proposed to equip the plant with 5,000 spindles and 125 looms for making sheeting.

—*Georgia, Eatonton. The new mill for the Eatonton Electric Company has been completed and is soon to be put in operation. The mill is equipped with 2,500 spindles and 100 looms for manufacturing sheetings. J. W. Preston is president of the company. Employment will be given to about 150 people.

—Georgia, Jefferson. A cotton mill is projected for this place, in which J. E. Randleman and H. W. Bell are interested. Quotations on machinery, and estimates on the cost of buildings are desired. Three 250 H. P. boilers will be put in place, and a dynamo for the generation of electricity for lighting purposes. Forty cottages are to be built for the accommodation of the operatives.

—*Georgia, LaGrange. The plans and specifications for the New Unity Cotton Mills have been completed, and are now in the hands of several contractors. As soon as bids are received, contract will be awarded and work started on construction of buildings.

—*Georgia, Lavonia. A location has been selected for the erection of the Lavonia Cotton Mills, which we recently reported would be established here, and work on the buildings will commence at once. All of the machinery has been contracted for. About 100 operatives will be required to operate the plant.

—*Georgia, Monroe. Work is progressing rapidly on the buildings of the Wal-

ton Cotton Mill, and they will be ready for occupancy now in a few months. About 400 operatives will be employed.

—*Georgia, Pelham. Operations are expected to start about the latter part of October in the Pelham Mfg. Co.'s new plant. This mill, the main building of which is 105 by 172 feet, 2 stories high, with power house 48 by 98 feet, and cotton warehouse, of four compartments, 50 by 120 feet each, will manufacture osnaburgs and ducks. The mill has an equipment of 3300 spindles and 100 looms to start.

—*Georgia, Rome. A new company has been formed here with capital stock of $20,000, as the Anchor Duck Mill, for purpose of erecting a cotton mill in manufacture of heavy duck. C. E. McLin, formerly Superintendent of the Rome Cotton Mill, is at the head of the new enterprise. At first only weaving will be done but later, spinning machinery may be added. Work will start at once on construction.

—*Georgia, Tifton. It is expected that the Tifton Cotton Mills, of which H. H. Tift, is president, and which have an equipment of 4,000 spindles and 125 looms, will be ready to start operations early in October.

—*Georgia, Tifton. Work is rapidly progressing on the Tifton Cotton Mills, and the machinery is expected this week, when it will be immediately installed.

—*Georgia, Toccoa. Work is progressing on the Capps Cotton Mill, which is to be 75 by 160 feet, brick, one story high, for the manufacture of hosiery yarn. Some of the machinery has arrived, and it is hoped to have the plant in operation by November 1st, employing about 100 hands. Steam power is to be utilized, and the machinery is to be of modern type.

—*Louisiana, Shreveport. Contract for the erection of the new Hargrove Cotton Mill has been let to J. C. Buchanan, of Fort Worth, Texas, who will begin work immediately.

—*Massachusetts, Indian Orchard. The machinery is now being installed in the Indian Orchard Company's new mill. The building will soon be ready for occupancy. As previously reported, this concern has let part of the plant to the Hodges Fibre Carpet Co., who are also increasing the capacity of their plant.

—Massachusetts, Lowell. A new concern, which has been in operation for some little time, making narrow fabric shoe gore and elastic webs, is managed by Andrew Y. Rodger.

—*Mississippi, Gloster. The Gloster Manufacturing Co., of which we have made previous mention ,has now decided upon location of the new plant. An engineer will soon make an estimate on the cost of grading.

—*Mississippi, Greenville. A. J. Bradley, of the United Cotton Mills, at Manchester, Va., has made a proposition to this town, regarding the removal of a cotton mill here, the said mill having 8000 spindles and 150 looms. A committee has been appointed to investigate the mill and report on acceptance of proposition.

—*Mississippi, Kosciusko. Walter Burgess, treasurer of the Kosciusko Cotton Mills, informs us that they do not contemplate having the mill in operation much before January 1st. The building is to be larger than originally intended, which was for 5000 spindles, but which will now be for 10,000 spindles.

—*New York, Schenectady. The lace mill, established at this place by Alb. & E. Henkels, with A. Attenborough, manager, will begin night work in about two weeks. The mill is busy at present. Of the 96 machines now in position, 40 are in operation. Torchon machine lace is made.

—*North Carolina, China Grove. The new cotton mill which we reported would locate here, is about to be built. The materials are now in preparation.

—*North Carolina, Elkin. Work is now progressing on the Elkin Cotton Mill, under construction for the Chatham Mfg. Co. It is expected to have the building ready for machinery about the first of December.

—*North Carolina, Elkin. The building for the Elkin Cotton Mill, under construction at this place for the Chatham Mfg. Co., will be 200 by 75 feet, 2 stories high. The mill is to be run in connection with the woolen mill, supplying that plant with warps, etc. They will also manufacture a large lot of other goods.

—*North Carolina, Gastonia. The Loray Mills, which are now under construction, and of which Geo. A. Gray is president and John F. Love, secretary-treasurer, expect to be ready to begin production of goods early in 1901. The mill, which will manufacture sheeting and general export goods, will have an equipment of 50,000 spindles and 1600 looms as has been previously reported.

—*North Carolina, Gastonia. The Arlington Mills, of which L. L. Jenkins is vice-president, and which will have an equipment of 6,000 spindles, is nearly completed. It is expected to start the plant in about four weeks.

—*North Carolina, Goldsboro. The building of the Borden Mfg. Co.'s new mill is now ready for installation of the machinery, which has already been purchased. Full report on mill previously given.

—*North Carolina, Goldsboro. The plant of the Borden Manufacturing Company is now ready for the installment of machinery, which has been contracted for.

—*North Carolina, Henderson. Work is nearing completion on the Harriet Cotton Mills, capitalized at $300,000, and of which D. Y. Cooper is president. It is expected to have all the machinery, 11,000 spindles, in place next month. Hosiery yarns are to be manufactured.

—*North Carolina, High Shoals. The machinery is now being installed in the plant of the High Shoals Mfg. Co., a new concern incorporated last year. They will manufacture fine sheetings. As was stated in issue some time ago, plant will have 5000 spindles and 150 looms.

—*North Carolina, Henrietta. Work has been started on erection of the Tum-

bling Shoals Cotton Mills, of which R. R. Haynes is president and treasurer. The mill, when completed, will have an equipment of 65,000 spindles, for making 5 yd. goods and No. 20 yarn.

—*North Carolina, Lenoir. Ground has been broken on the site of the new mill to be erected for the Rhodhiss Mfg. Co., recently incorporated.

—*North Carolina, Lexington. The buildings of the Nokomis Mills will soon be completed and ready for installation of machinery.

—*North Carolina, Lowell. The Lowell Cotton Mills will be equipped with 5000 spindles, together with twisters to suit, instead of 3000 as originally intended. They will make 20s to 50s yarns, two and three ply. It is expected to have the mill ready to begin operations by November. This is the concern of which S .M. Robinson is secretary and treasurer.

—North Carolina, Lumberton. The Lumberton Cotton Mills, upon which work on construction of buildings will be started in about one month, in order to start production of goods in about six months, will make hosiery yarns, No. 20s to 32s. The company is capitalized at $100,000, with R. D. Caldwell, president, and H. B. Jennings, treasurer. Mill is to be equipped with 5000 spindles. They inform us that nothing has yet been purchased in the line of machinery, etc., for the mill.

—*North Carolina, Oxford. Work is now progressing on the erection of the Oxford Cotton Mill Co.'s plant. This is the concern of which C. J. Cooper is treasurer.

—North Carolina, Roanoke Rapids. The Patterson Textile Co. expect to have their new mill in operation about the 1st of October.

—*North Carolina, Troy. Work is being pushed to completion on the buildings of the Capelsie Cotton Mills, which will soon be ready to receive machinery. The machinery contracts have been let to The D. A. Tompkins Co., of Charlotte.

—*North Carolina, Wake Forrest. The Royall Cotton Mills, of which W. C. Powell is president; R. E. Royall, vice-president and treasurer, and T. E. Holding, secretary, will not be ready to begin operations for several months.

—*Rhode Island, Bristol. The construction of the Dixon Yarn Mills, recently reported, has been postponed for the present, owing to the market conditions affecting building materials, and inability to obtain the necessary machinery within a reasonable time.

—*Rhode Island, Woonsocket. The new weave shed for the Social Mfg. Co. is nearing completion. This building, which is 300x258 feet, one story, will have equipment of 1,500 looms.

—*South Carolina, Charleston. The Royal Bag & Yarn Mfg. Co. are now ready to consider plans and equipment for their new mill, in which they will manufacture yarn and bags.

—*South Carolina, Columbia. The Capital City Mills, which have been under construction for some time, have applied for a charter, with a capital stock of $100,000. The incorporators are R. B. Jennings, W. A. Clarke, W. B. S. Whaley, and B. F. Barnes.

—*South Carolina, Greer Depot. A charter has been secured by the Franklin Mills, which we previously reported, to erect a cotton mill, for making coarse yarns. W. W. Burgess is president and M. B. Cunningham, secretary.

—*South Carolina, Liberty. The Liberty Cotton Mills, incorporated with capital stock of $100,000, J. P. Smith, president and treasurer, expect to begin operations about June, 1901, making fine sheetings. Mill is to have an equipment of 6000 spindles and 200 looms. Steam power will be used. Some of the equipment has not yet been contracted for.

—South Carolina, Winnsboro. It is rumored that a new cotton mill is to be established here.

—*South Carolina, Woodruff. Work is to be started shortly on construction of buildings for the Woodruff Cotton Mill, of which A. W. Smith is president. This mill is to have an equipment of 10,000.

—*Tennessee, Covington. The work has been completed on buildings of the new Tipton Cotton Mills. The machinery is now being installed.

—*Tennessee, Humboldt. H. C. Burnett is president, Calvin H. Ferrell, vice-president, Robert L. Bearce, secretary, Albert R. Dodson, treasurer, and T. H. Leever, superintendent of the Humboldt Cotton Mills. The buildings are now under construction.

—*Texas, Belton. Work on the Belton Cotton Mills is being rapidly pushed, and the company are receiving bids on engines and boilers for the plant. Cottages are being erected for the use of employees.

—*Texas, Gonzales. Work will be started in a few days on erection of buildings for the Gonzales Cotton Mills, for which plans and specifications will soon be ready. This mill has been reported in full in previous issues.

—*Texas, Hillsboro. The contract has been let for the erection of the factory for the Hillsboro Cotton Mill Company, and it is expected that work will be commenced about September 15th. As soon as the building is completed, the machinery will be purchased and put in operation.

—Texas, Meridian. Arrangements are being made for the organization of a $100,000 cotton mill at this place, to be operated in connection with the roller mill now being erected here. J. W. Rudasill is interested in the project.

—*Virginia, So. Boston. Work is progressing rapidly on the erection of the Century Cotton Mills, of which F. A. Lukin is treasurer. The main building will be 214 by 80 feet, 2 stories high, with an engine and boiler room 41 by 93 feet. The mill is to be operated by steam and electric power. About 25 cottages are yet to be erected for the operatives.

Enlargements and Improvements.

—Georgia, Griffin. The Rushton Cotton Mills are to erect new buildings, and ma-

chinery for the same has been ordered, which will probably be in operation by January 1st. This will double the capacity of their plant.

—*Georgia, Newnan. The new addition to be erected by the Newnan Cotton Mfg. Co., and for which we reported $35,000 would be expended, will be equipped with 4000 new spindles.

—Georgia, Stone Mountain. The Annestown Cotton Mills are to add about 70 looms to their plant, for the manufacture of cotton duck and osnagurgs.

—Georgia, Thomaston. Contract has been let by the Thomaston Cotton Mills for the installation of a complete electric light plant in the mills.

—*Georgia, Union Point. The Union Point Manufacturing Co., which has recently completed addition for yarn mill, and will soon install machinery for spinning yarn, is now considering the installation of a 200 light dynamo for 20 candle power lamps. Harold Lamb, formerly of Augusta, now holds position of president.

—Maine, Lisbon. The Farwell Mill is laying the foundation for a new engine house, and the 75 H. P. engine which was taken from the mill some years ago, will be reset to increase the power. A dynamo is also to be added for the furnishing of electric lights.

—*Maine, Westbrook. The Dana Warp Mills advise us that they will begin production in their new plant, which they purchased from the Westbrook Co., about Sept. 20. This will give them a capacity of about 10,000 more spindles.

—Massachusetts, Canton. An addition, costing about $10,000, is to be built to the plant of the American Net & Twine Company.

—Massachusetts, Worcester. The Wachusett Thread Company is to increase its capital stock from $50,000 to $100,000. They will install 50 new machines in the plant.

—*New York, Capron. The Utica Cotton Company has shut down its plant for about three weeks, to allow installation of a new 700 h. p. engine, foundations of which are now nearly completed. New and improved machinery will be installed in the addition, which we previously reported in full.

—New York, Cohoes. The Walker & Harp Mfg. Co. is installing new machinery in their cotton bat factory. The plant, which is being operated to its full capacity, will be run nights to fill orders.

—New York, Jamestown. An addition 20 by 36 feet, 2 stories, is being built to the main building of the Falconer Towel Co.'s plant, to accommodate the warp-dressing department and for increased storage.

—*New York, Valatie. A new engine is to be installed in the Valatie Cotton Mill. Owing to the extremely low water, this mill has been unable to run full time, and as soon as installation is completed will return to old schedule time.

—*North Carolina, Albemarle. Operations have been suspended in the Wiscasset Mills during installation of new machinery. They are now installing 5000 additional spindles, which will give the plant a total of 20,000 spindles.

—*North Carolina, Gastonia. The addition to the No. 2 mill of the Trenton Cotton Mills is nearly completed and it is expected to have the same in operation in about three or four weeks.

—*North Carolina, Jonesboro. The new machinery which we reported would be placed in the plant of the Jonesboro Cotton Mill Company, is now being installed, which considerably increases the capacity of the mill.

—*North Carolina, King's Mountain. Work is now under way on increase of capacity of the Lulu Cotton Mills. Work is nearing completion on the erection of the new Bonnie Cotton Mills, of which we have previously given detailed report.

—North Carolina, Mayodan. Work is soon to be started on the erection of a 500 electric light plant for the Avalon Cotton Mills. Contract has been let.

—North Carolina, Raleigh. New machinery is being placed in the plant of the Raleigh Hosiery Yarn Mills, for the production of finer yarns.

—North Carolina, Rutherfordton. An addition is to be built to the Levi Cotton Mill Co.'s plant at this place.

—Pennsylvania, Chester. T. I. Birkin & Company, manufacturers of lace curtains, nettings, etc., are importing machinery from England, which will double the output of their plant.

—Pennsylvania, Philadelphia. The new building for the Philadelphia Tapestry Mills on Allegheny Ave. is nearly completed and will soon be ready for occupancy.

—*South Carolina, Fingerville. About 6000 spindles are to be installed in the Fingerville Mfg. Co.'s plant.

—*South Carolina, Greenwood. Work on the new Greenwood No. 2 cotton mill will probably not be started until next year, owing to unsettled condition of the cotton goods market.

—South Carolina, Winnsboro. The Fairfield Cotton Mill is to be enlarged, and the contract for the work has been let, to be commenced at once. New machinery has been ordered, and the number of spindles increased to *0,000.

Mills Shutting Down.

—Maine, Richmond. The Richmond Cotton Mills have been shut down for an indefinite period.

—Massachusetts, Newburyport. The Peabody Mill No. 1, of the Peabody Mfg. Co.'s plant, is to be closed down for an indefinite period. The Victoria Mill, which spins yarn, will probably continue operations for sometime.

—North Carolina, Charlotte. After a second conference between the Southern Cotton Spinners' Association and the Yarn Merchants' Association, the former concern, which claims to represent 70 per cent. of the spindles in the South, advise a curtailment of production, which will relieve the surplus on the market.

Woolen.

New Mills.

—*California, Eureka. The buildings for the Humboldt Bay Woolen Mill have been completed and are ready for installation of machinery, which is now on the way.

—*California, Santa Cruz. Work will be started at once on removal of the Pioneer Woolen Mills, at Dallas, Oregon, to this place, the necessary amount having been raised to secure the project. It is expected that the mill will be ready to begin operations January 1st, 1901.

—*Massachusetts, Barre. Contract for the erection of the new mill at South Barre for Francis Willey & Co., of Boston, has been let to Cutting, Bardwell & Co., of Worcester. Work will start at once on erection of building, which will be 300 feet long, one story high, with basement. Worsted tops will be manufactured.

—*Montana, Big Timber. The Sweet Grass Woolen Mill Co. has been incorporated by E. O. Clark, John F. Asbury, Henry Nicholson, H. O. Kellogg and Wm. Whitfield, with capital of $50,000. The plant of Wm. Whitfield & Sons, Lanark, Ill., will be moved to this place, and other machinery added to make a complete two-set mill, for manufacturing blankets and flannels. It is expected to have the plant running by the first of the year. The building will be 40 by 84 feet, two stories and basement, and will have both steam and water power. Wm. Whitfield will assume management of the new mill.

—*New Jersey, Gloucester City. The Fries-Harley Company, recently incorporated with capital stock of $200,000, with Frederick Fries as president and supt. and Wm. J. Thompson, treasurer, expects to begin operations December 1st, making carpets and rugs. The plant, which will have an equipment of 50 looms, will be run by electric power.

—*New York, Falconer. Machinery is now being installed in the Falconer Worsted Mill, buildings, of which have recently been completed. The mill is of brick, 2 stories, 130 by 60 feet. Asa Hind, of the concern, will act as general manager. Medium and fine worsted yarns are to be made.

—Pennsylvania, Pittston. Edward J. and William H. Rutledge are interested in the project of a factory here for the manufacture of tapes and braids. Work will soon be started on erection of a two-story brick building, 60 by 100 feet. Employment will be furnished for about seventy-five people at first, number to be afterward increased.

—Tennessee, Chattanooga. The Wool Extract and Merino Company has been organized with capital stock of $20,000 by Morgan Llewellyn, L. Llewellyn, Dr. R. T. Isbester and J. T. Raht. The plant will consist of several departments, the first to receive and store rags; the second to contain the machinery for coloring and dyeing the wool, another for carbonizers to burn the cotton and one for finishing.

—*Virginia, Winchester. The Virginia Woolen Company has been chartered here, with a capital stock of $25,000, and it is expected that the mill will be ready to commence production about December 15th. The officers are as follows: W. B. Crawford, president; W. H. Barker, vice-president; Shirley Carter, secretary and treasurer. W. H. Crawford, W. B. Baker, German Smith, W. C. Grachen, S. H. Hansbrough, Dr. W. S. Gove, and F. L. Glaze are the directors. This project was mentioned in our issue of August 31.

Enlargements and Improvements.

—Connecticut, Stafford Springs. A new 316 mule spindle and other new machinery has recently been installed in T. F. Mullen & Co.'s woolen mills.

—Georgia, Atlanta. A large dye house is now under construction for the Atlanta Rug Mills. The plant has otherwise been enlarged and the output doubled.

—Indiana, South Bend. Work has been started by the South Bend Woolen Mfg. Co. on the erection of a four story addition to the plant. Work will be pushed as rapidly as possible.

—Maine, Winthrop. The Winthrop Mills Company are to build an addition to their woolen mill, four stories high, which is to connect with their storehouse, forty feet distant. The first floor will be utilized for finishing, and looms will be placed on the floors above. A new water wheel and house for same will be added to their cotton mill.

—*Massachusetts, Dalton. Another set of cards has recently been installed in Andrews & Reddick's woolen mill at this place. The plant is now being operated night and day filling orders.

—Massachusetts, Lawrence. The Essex Company have been filling in the river bed at the rear of the lower Pacific Mills, and it is reported that the Pacific will erect a mill upon the new made land.

—Massachusetts, Pittsfield. Work has commenced on the addition to the mill of the Pontoosuc Woolen Company.

—*Massachusetts, Pittsfield. Work is nearly completed on erection of building to be used by the Pontoosuc Woolen Company as a drug room. When this is done, work will be started on building the addition to the weave shed. All the departments of the mill are now running to their fullest capacity.

—*Minnesota, Rochester. The Rochester Woolen Mills are being put in first-class condition under new management. Bramwell feeds are being put in, and mules are being changed from race belts to rim ropes. Also a new picker, wool and cloth washer from James Hunter Machine Co. New shear and engine are being installed. They expect to be running about the 1st of October.

—*New York, Jamestown. The new addition to the Broadhead Worsted Mills, about which we gave full report in issue of July 9th, is nearing completion and will soon be ready for installation of machinery.

—Pennsylvania, Upland. Improvements are now being made to the interior of Walworth & Sons' mill at this place.

—Quebec, Sherbrooke. W. S. Dresser, who went to London some months ago for the purpose of floating a company to

take over the Dominion Brussels Carpet Co., was successful, and the new company has acquired property in which it is the intention to install tapestry and velvet looms, electric light and power plant, largely increasingthe capacity of the concern.

—Rhode Island, Providence. New machinery is now being installed in the two upper stories of the No. 8 storehouse of the National and Providence Worsted Mills. There will be 100 new looms. Electrical power will be used.

—*Rhode Island, Wickford. Six new looms are to be installed in the Wickford Worsted Mills, of which William Gregory is proprietor.

—Tennessee, Lenoir City. New machinery is to be added to the equipment of the Dixie Knitting Mills. This mill is said to have orders six months ahead.

—Wisconsin, Appleton. The Appleton Woolen Mills have recently completed an addition to the mills, which will double production of the paper-machine felts. The machinery is now to be installed. It is expected to have the additional looms in operation by the first of October.

Mills Shutting Down.

—*Massachusetts, Lowell. The ingrain department of the Bigelow Carpet Co.'s plant will shut down Sept. 30th, for two weeks.

—New York, Cossayuna. The blanket mill of Alexander Bros. has shut down for an indefinite period.

Knit.

New Mills.

—*Georgia, Atlanta. The Atlanta Knitting Mills have been organized with capital of $100,000, with Jerome Silvey, president, W. B. Nunnally, vice-president and general manager, and C. E. Currier, secretary and treasurer. A site has already been purchased for the mill.

—*Georgia, Macon. The Schofield Mfg. Co., of which F. O. Schofield is president, is now in running order and sending out samples of goods. This is a new concern for making men's ribbed underwear, operating about 26 machines, when running in full.

—*Georgia, Macon. The Exchange Cotton Mfg. Co., capitalized at $25,000, with J. W. Cabaniss, president, George L. Snowden, treasurer, and which started operations the first of September, is equipped with 12 knitting machines. James Talcott sells the goods, viz: men's ribbed underwear.

—*Georgia, Winder. The new building for the Winder Knitting Mills Co., and for erection of which contract has been let, will be 60 by 40 feet, 2 stories high. The company has a capital stock of $20,000, with R. B. Russell, president, and E. Kendrick, secretary and treasurer.

—*New Jersey, Bridgton. The old Lucknow Paper Mill building has been purchased by Thomas P. Eltonhead and George S. Wilson (Vineland), and will be equipped for making knit goods. Work has been started on remodelling the same. Ten machines will be installed at first, number to be increased later.

—*New York, Newport. The Newport Knitting Co., about which previous mention has been made, will begin production of goods about Nov. 1st., with an equipment of 40 knitting machines. Ladies' ribbed underwear will be made.

—*New York, Oneida. Latest advices are to the effect that the knitting mill for which George A. Frisbie and Charles A. Oakes of Utica have been looking up a site for in towns adjoining Utica, is likely to be located here. Local advices say that buildings have been leased, and the plant, which will have a daily capacity of 300 dozen hosiery, will be started up some time in October. Mr. Oakes will be the manager.

—*Ohio, Piqua. The property at the corner of Chestnut St. and Panhandle R. R., has been purchased by Cahill-Leonard & Company, who will remove the present building and erect a knitting mill, work on which has already commenced.

—*Pennsylvania, Mechanicsburg. The Valley Hosiery Co. is the name of the new concern now erecting a hosiery mill at this place. Plant will have an output of 200 dozen pairs per day. C. Sherman Grove and Walter Smith are interested.

—*Pennsylvania, Pottsville. Ira S. Henne's seamless hosiery factory, which was destroyed by fire, is to be rebuilt at once.

—*South Carolina, Newberry. We now learn that the organization of the Newberry Knitting Mill has been perfected. The company has a capital stock of $25,000, with W. H. Day as president and treasurer. They will make men's hose and expect to have 100 knitting machines in operation about January 1st, 1901. They are in the market for a boiler (25 h. p.) and an engine (15 h. p.). Work has been started on construction of the buildings.

—*Tennessee, Chattanooga. The Chicamauga Knitting Mills confirm our report of last week, and advise us that they expect to begin production by December 1st, making ladies' ribbed underwear, summer and winter weights. 14 body machines and 14 sleevers. There will be no dye house. Selling agents have not yet been appointed.

—*Texas, Denison. It is expected that the Gate City Hosiery Mills will start operations about the first of October. The mills will have a capacity of 300 dozen hose per day.

—*Tennessee, Knoxville. J. T. Brownlee will be secretary and manager of the new knitting mill at this place, organization of which has been successfully completed. Capital stock, $50,000. They will make men's ribbed cotton underwear, starting with 30 machines. A new building will be erected, to be operated by steam power. They expect to begin production March, 1901. Mr. Brownlee will be in the East early in October to arrange about the purchasing of machinery.

—*Virginia, Williamsburg. The erection of the Williamsburg Knitting Mill is rapidly progressing. All of the machinery has been contracted for, and a portion of it is expected within a few days.

—Wisconsin, Appleton. A company has been formed here for the purpose of erecting and operating a knitting factory. John Steinberg, late superintendent Lake Superior Knitting Co., and others, are interested in the project. The old flour mill, owned by the Fox River Paper Company, has been leased, and it is now being remodeled for the reception of the machinery which has already been contracted for. It is hoped to have the plant in operation by November 15th.

Enlargements and Improvements.

—Connecticut, Addison. The plant of the Glastonbury Knitting Company is to be equipped with electricity.

—Georgia, Henderson. An addition, 80 by 150 feet, has recently been completed for the Henderson Mfg. Co., manufacturers of ladies' underwear.

—Indiana, South Bend. The A. C. Staley Mfg. Co. will close the last week in September, to put in a new 100 H. P. water wheel, and will also build a new brick addition, 62 by 66, and add one more set of machinery, making eight sets in all. This concern manufactures a very fine line of flat and ribbed goods.

—Maryland, Hagerstown. The capital stock of the Windsor Knitting Mills is to be increased from $9000 to $12,000, and the output will be 500 pairs of hosiery per day, employing 150 hands.

—*North Carolina, Henderson. The buildings recently erected for the Seaboard Knitting Mills, for dyeing purposes, are nearly completed.

—*North Carolina, Henderson. An electric light plant is to be installed in the Seaboard Knitting Mills.

—*North Carolina, Newbern. The Clermont Knitting Mills have recently completed an enlargement to the dyehouse and the installation of new machines in the plant.

—*Pennsylvania, East Stroudsburg. An addition is to be built to the Melrose Hosiery Mills, now owned and operated by Thos. Henry, Jr., whose plant at Philadelphia has been removed to this place. The mill will have a full equipment of 300 knitting machines, making fine seamless hose.

—Pennsylvania, Pittston. An addition 40 by 50 feet is to be made to the Luzerne Knitting Mill, E. L. Ellithorpe, proprietor.

—*Pennsylvania, Wilkesbarre. An addition, 24 by 40 feet, 2 stories high, is now underway for the Lee Park Knitting Mills, W. P. Morgan, proprietor. As previously reported, he has purchased additional machinery.

—Pennsylvania, York. The York Knitting Mills are to build an annex to their present building, 30 by 30 feet, which will be used for drying purposes.

—*South Carolina, Orangeburg. The Orangeburg Knitting Mills, a new concern, have decided to double the capacity of the plant and are now installing the new machinery. This company manufactures hosiery.

—*Utah, Logan City. The Logan Knitting Factory, which manufactures underwear and hosiery in wool, cotton, silk and mixtures, added 7 new knitting machines, giving the plant a total of 25. Electric power will soon be adapted in the mill.

Mills Starting Up.

—New York, Cohoes. Operations have been resumed in the Standard Knitting Mill, which has been closed down.

—New York, Green Island . The Green Island Knitting Mill, which has been shut down for purpose of changing the machinery, preparatory to starting manufacture of winter goods, resumed operations in full the 10th inst.

—New York, Mechanicsville. The Mechanicsville Knitting Company has resumed operations in the mill after a shut down of three weeks for needed repairs.

Silk.

New Mills.

—New York, Seneca Falls. The Board of Trade is interested in the establishment of a large silk mill at this place. Correspondence has recently been had with a representative of the concern, but no agreeable decision was reached with the owners of the property, which he desired to lease for the purpose.

—*Pennsylvania, Meadville. The amount required by the Banner Silk Company to locate its branch mill here is now practically assured, and plans have been made by that concern to lease a portion of the Century Press Building, for five years, with a lease option on the Chautauquan Building after September, 1901, and an option for the purchase of the building entire at the expiration of the five years. The company expects to establish a plant which will give employment to 150 hands at the start and increase the number to 300 later on. Dress silks will be manufactured, and it is probable that they will have a throwing department, and spin the raw silk into thread from the cocoon.

—*Pennsylvania, Taylor. W. R. Lewis is president, P. A. Loubignac, treasurer and general manager of the Laurier Sons Silk Co., whose silk throwing plant is now under construction at this place. The company has capital stock of $25,000.

—*Rhode Island, Pawtucket. Work has been started on excavations for the new velvet mill to be erected by the Royal Weaving Co., at Darlington, whose main mill is now located at Central Falls. The mill will be 485 by 131 feet; dimensions of the weave room being 330 by 113 feet; with separate boiler house, 100 by 42 feet. Plant is to be equipped with electricity, each loom to be operated by an electric motor.

Enlargements and Improvements.

—*Massachusetts, Lawrence. The new plant of the Lawrence Dye Works Co. is nearly finished. The plant consists of a new building 160 by 60 feet, 3 stories high and a new dye house, 90 by 45 feet.

—New Jersey, Paterson. Daniel Mason, who buys and sells odd lots of silk on spools or in skeins, now located at 12

Clark St., is to move to larger quarters, where he will install a plant of 2000 spindles for throwing silk. This will be in active operation about Nov. 1st.

Mills Starting Up.

—*Pennsylvania, Bradford. The new silk mill, established at this place by Henry Leon, of Paterson, N. J., for throwing silk, and in which operations have been started, has an equipment of 3200 spindles. Gas is used.

Miscellaneous.

New Mills.

—*Pennsylvania, Royersford. The new building to be erected by Frank Kupka, proprietor of the Royersford Dye Works, to replace plant destroyed by fire, will be 70x105 feet, two stories, with boiler house, 20x35 feet.

Enlargements and Improvements.

—Connecticut, Norwich. The United States Finishing Company are expending about $200,000 for new machinery for their new building, which we recently reported they were about to erect.

—*New Jersey, Paterson. The new finishing department, now under construction for the Reid & Barry Co., of the United States Finishing Company, will be ready for operations in about a month. It is to be run by electricity.

Fires.

—Pennsylvania, Indiana. The Indiana Woolen Mills, operated by McElhoes & Findley, was totally destroyed by fire on September 1st. The loss is estimated at $16,000, the plant being insured for only $7000.

—Rhode Island, Pawtucket. Fire occurred on September 1st in the building occupied by the American Yarn Printing Company, and a large portion of their stock, valued at $5000, was destroyed. The loss was covered by insurance.

Failures and Suspensions.

—New York, Unionville. Toner & Prescott, silk manufacturers, have filed a petition of bankruptcy. The liabilities are about $66,123.00, with nominal assets of $$66,150.00.

Facts and Gossip.

—Connecticut, Colebrook. The cotton mill, property of the Sawyer Estate, and which has been for sale for some time, has been sold to southern parties. It is reported that the machinery is to be shipped south and installed in a mill at that place.

—Connecticut, Willimantic. Roger Ryan of this place, is making an effort to organize a company with capital of $20,000 to manufacture web and tape.

—Georgia, Augusta. It is reported that J. W. Dickey and C. S. Heard, who have recently purchased 16,000 acres of land and a large water power, are to erect a cotton mill.

—*Georgia, Dalton. J. T. Richardson advises us that the enterprise with which he was connected has not materialized, as they were unable to get subscriptions enough to build the mill.

—Georgia, Fayetteville. It is reported that Hollingsworth & Redwine are now receiving estimates on machinery for making shuttles and bobbins for cotton mills.

—Georgia, Felton. A. J. Estes of this place contemplates erecting a knitting mill and is now receiving estimates, etc., on machinery and buildings.

—Georgia, Fort Valley. A knitting mill, with dyeing plant attached, is to be established here by J. M. Jones.

—Georgia, Hammond. A company has been formed at this place for purpose of erecting a cotton mill. Plans are now being considered and a committee is making investigations regarding the various equipments of mills, now in operation.

—*Georgia, Rutledge The question of establishing a cotton mill at this place is again under consideration. It is proposed to organize a company with capital of $50,000. Wm. P. Wallace is an active spirit in the project.

—*Georgia Social Circle. The question of a cotton mill is again being agitated here. It is now said that sufficient funds have been secured to warrant the erection of the plant. Joseph Blasingame has been interested in the project.

—Georgia, Thomaston. R. E. Hightower is interested in the erection of a knitting mill at this place.

—Georgia, Villa Rica. Geo. Malone is interested in receiving subscriptions for a cotton mill projected at this place. It is said that the final location of the mill has been assured.

—*Indiana, Indianapolis. The post office department has issued a fraud order against the Co-operative Knitting Co., and the trade is cautioned against doing business with them.

—Maine, Waterville. The Lockwood Company area dding 1300 new looms to their plant, 800 of them being already in operation.

—*Maryland, Cumberland. It is reported that the Klots Company, which has mill established at Carbondale, Scranton (Pa.) and Fredericksburg, Va., is negotiating for a mill at this place, and will furnish employment for about 300 people.

—Maryland, Mechanicsburg. It is reported that capitalists of Hagerstown, are interested in the establishment of a large knitting mill here for manufacturing ladies' and men's hosiery. The mill it is said will furnish work for about 100 people.

—Massachusetts, Boston. The Cherokee Turkey Red Dye Works is a new concern recently organized under New Hamp-

shire's laws with capital stock of $50,000. The incorporators are: G. W. Gilbert (Newton Centre, Mass.), B. R. Gilbert (Newton Highlands), J. Edwards (Wellesley Hills), and O. G .Hammond (Concord). The first three named are members of the firm of Gilbert Bros. & Co.

—*Massachusetts, Middleboro. Operations have been suspended in the spinning department of the Star Mills. As the company now manufactures worsteds, and the spinning mules are only adapted for wool filling, the filling is brought from their other mill.

—*Massachusetts, Milford. The Magid-Hope Silk Company has recently purchased another large tract of land, upon which they propose erecting houses for the many operatives who are to be employed in the new plant.

—Massachusetts, Millbury. The West End Flax Mills, W. L. Whitney proprietor, which have been run on short time, will now be operated on full time. A new 80 h. p. engine has just been installed.

—*Massachusetts, Millbury. It is reported that the C. T. Aldrich satinet mill, which has been idle for some time, is likely to be repaired, ready for business. This mill, together with the Millbury Cotton Mills, is offered for sale.

—Massachusetts, Millbury. Alfred H. Hall, who is interested in the Union Linen Co., with plant at this place, is now in New York, consulting with parties relative to securing new capital, etc., to add to the stock and arrange for restarting the plant which has been idle for some time.

—Massachusetts, New Bedford. A report has been in circulation that Byron F. Card, who recently resigned the agency of the Howland Mills, would organize a company to build a new yarn plant. Mr. Card neither confirms or denies the report.

—Massachusetts, New Bedford. At a recent meeting of the stockholders of the Grinnell Mfg. Co. ,recommendations were made to increase the capital stock to the amount of $200,000 and issue mortgage bonds bearing 5 per cent. interest, to the amount of $400,000.

—Massachusetts, Quinapoxet. The shoddy manufacturing plant at this place owned by M. V. B. Jefferson, of Worcester, has been leased by Thomas Gleason (Quinapoxet) and James Welsh, (Springdale), who will operate the mill under name of the Welsh-Gleason Mfg. Co.

—Massachusetts, Taunton. Edward B. Lovering has been appointed purchasing agent for the New Bedford and Taunton Mill of the New England Cotton Yarn Co., in place of Edward B. Maltby, who has resigned.

—New Hampshire, Manchester. At the annual meeting of the stockholders to be held Oct. 3d, the directors of the Amory Mfg. Co. propose to reduce the capital stock of the concern, now $1,350,000, to $900,000.

—New Jersey, Athenia. It is reported that John Thorpe, at present with the Reid & Barry Co., with associates, is to equip the old Jackson Mill, vacated by Stubbs & Miller, as a print works.

—*New Jersey, Haledon. The plant of the Mountain Silk Co., which occupies the mills vacated by William Wicke, has been closed on attachments issued in favor of H. W. Mills, Holden Rigby & Sons and Wayne Dumont.

—*New Jersey, Paterson. The Doherty & Wadsworth Company has started its plant up on full time. It is hoped that others of the numerous mills shut down, or running short time, will soon resume work in full.

—New Jersey Paterson. Lambert & Platt, formerly located on Ellison Street, as manufacturers of silk ribbons, have gone out of business.

—New Jersey, Paterson. Francis Magrath, Emil Ammann and Francis Arnold have incorporated the Magrath, Ammann & Arnold Co., with capital stock of $50,000. They propose buying and finishing silk. Principal office is at 58 Garfield Ave.

—New York, Cohoes. The Lion Knitting Mill, of which Charles Craig was formerly proprietor, has now been purchased by John Horrocks. This plant manufactures balbriggan underwear.

—*New York, Delhi. It is reported that the Delhi Silk Mill is to be put in operation at an early date.

—New York, Fort Plain. The Alba Dyeing and Bleaching Company, a concern started in the spring of this year, has been obliged to suspend operations. The machinery is to be sold and the business closed up.

—New York, Haverstraw. The E. S. Higgins Carpet Co.'s property on 43d Street, where mill is now located, has been secured by the New York Central Railroad, and the company will be obliged to remove the plant. They have been making investigations at this place. Prefer erecting a new mill, to leasing buildings. The present lease does not expire for four years, but they are now making a start for the future.

—*New York, Little Falls. The Saxony Knitting Mills have been bid in by the Little Falls National Bank, at a sale called by the city treasurer for unpaid taxes, to protect its equity in the property.

—New York, Phoenix. Duffy Brcs.' Silk Mill at Port Jervis will be removed to this place by the 15th of October, having leased a building for ten years. About 25,000 spindles will be operated, giving employment to 150 people.

—*New York, Sidney. The Clark Textile Company has been incorporated with capital stock of $200,000. Joseph H. Clark, G. G. Goodrich, D. E. Wing and J. D. Wendell are among the directors. This concern we understand will operate the plant of the Clark Fabric Co.

—New York, Valatie. The stock is now being run out at the Wild Manufacturing Co's plant, preparatory to changing the plant from a print cloth mill to one for manufacturing hosiery. Mill is to be equipped on a modern scale.

PERSONAL RECORD.

Cotton.

—M. E. Armstrong is now filling the vacancy recently caused by the resignation of Overseer of Carding Hutchings, at the Eagle and Phoenix Mills, of Columbus, Ga. Mr.Armstrong was formerly connected with the Piedmont, S. C., mills as overseer of carding.

—H. A. Bynum, who has been superintendent of the Holt-Williamson Mill at Fayetteville, N. C., has resigned to accept the superintendency of the plant of the Odell Cotton Mfg. Co., at Bynum, N. C., succeeding Supt. C. F. Hislop.

—J. F. Bell, formerly of Piedmont, S. C., is now acting as overseer of weaving at the Cherry Cotton Mill, Florence, Ala., succeeding H. L. Holden, who has gone to the Maginnis Mills, New Orleans, La., to accept a similar position.

—Thomas H. Conley, who was for a number of years overseer of mule spinning at Ware, Mass., and later superintendent of a mill in the South, has been engaged as overseer of the mule spinning in the new Baltic Mills, Baltic, Ct., which have 50,000 mule spindles, spinning average counts of 100's.

—Ellis L. Castor has been appointed manager of the Reading (Pa.) Cotton Mills, Garner & Co., proprietors. He was formerly for several years chief clerk for the same concern. He succeeds Jonathan Smith, the former manager, the latter having died recently.

—John A. Cronin, Philadelphia, has been engaged by the South Chester (Pa.) Mfg. Co., as overseer of carding in their No. 2 mill, succeeding Benjamin Middleton, who resigned in order to accept a similar position with the Brookside Mfg. Co., Lenni, Pa.

—J. S. Daudelin, overseer in the spinning room of the Stafford Mill, No. 2, has given up the place to accept a similar one in the Flint Mill, Fall River, Mass. The vacancy will be filled by his son, Joseph Daudelin.

—J. H. Denny, formerly of the Leaksville Cotton Mill, has changed to the Hucomuga Mills, Greensboro, N. C., where he is filling the position of superintendent.

—W. R. Denny, who has been with the Riverside Mills, Danville, Va., for a number of years, has changed to a similar position with the Leaksville Cotton Mills, Spray, N. C.

—S. Frank Dexter has severed his connection with the Dexter Yarn Co., Pawtucket, R. I. Mr. Dexter spent practically his whole life in the mills. Before entering the yarn company as an employee, in 1867, he was about the mills when he attended the grammar school. Under the direction of his father, he soon became an expert in the trade. In 1880, when the Dexter Yarn Co. was incorporated, Mr. Dexter was one of the incorporators and was made secretary and later manager. He has the reputation of keeping all of his engagements with his customers, was considered an excellent judge of credits and enjoyed the confidence of the trade.

—F. W. Hicks, of Montmorency, P. Q., has taken a position as boss carder at the Tremont Mill, Lowell, Mass.

—H. J. Holbrook, from New England, has been engaged as superintendent of the new Shuford Mills at Hickory, N. C.

—C. A. Johnson, of Methuen, has tendered his resignation to the Pemberton Mills, Lawrence, Mass., where he has been employed for some time as boss dyer, in order to accept a position in Mexico.

—Thomas Johnston is the new boss dresser at the Laconia Mills of the Pepperell Mfg. Co., Biddeford, Me. Mr. Johnston held a similar position at the York Mfg. Co., Saco, Me., for 20 years.

—Charles E. Meader, who has been in the employ of the Lowell Bleachery, Lowell, Mass., since June 1st, as superintendent, on October 1st succeeded Frederick I. Walsh as agent.

—R. E. Mathewson, formerly of the Valley Queen Mill, River Point, R. I., has accepted charge of the spinning and twisting at the Magid-Hope Silk Co., Milford, Mass.

—J. McNabb, of Amesbury, Mass., has secured the position of boss weaver at the Boott Cotton Mills, Lowell, Mass.

—Amos G. Maddox, overseer of carding in the Linwood Cotton Mill, at Whitinsville, Mass., has been appointed superintendent to succeed Arba C. Slater, deceased.

—James McCarty has resigned as overseer of the bleach room at the Lowell Bleachery, Lowell, Mass., and John Smith has succeeded him.

—Lloyd Pearl, formerly of the Cocheco Mfg. Co., Dover, N. H., is the new boss spinner at the R. W. Lord & Co.'s mill, Kennebunk, Me.

—T. E. Price, for five years overseer of the spinning department of the Burlington Cotton Mills at Burlington, Vt., has resigned his position and accepted a similar one with the Lonsdale Co., Lonsdale, R. I.

—T. E. Pray is the new overseer of spinning at the No. 4 mill of the Lonsdale Co., at Lonsdale, R. I. Mr. Pray, who fills the place vacated by the resignation of Ralph Drabble, after 45 years of continuous service for the company, comes from Burlington, Vt., where he was connected with a mill located just outside that city.

—C. Melville Read, overseer of carding at the A. F. Knight mill, Woonsocket, R. I., has resigned and is succeeded by Daniel Barry. Mr. Read has accepted a position in the Overland Cotton Mill, at Denver, Colorado.

—C. P. Roberts, who has for years been connected with the Chewalla Cotton Mill at Eufaula, Ala., resigned his position as secretary and treasurer of the mill recently, and D. B. McKenzie was immediately elected to the position. Mr. Roberts' resignation was looked upon with much regret.

—Philip Stockton, son of Howard Stockton, Boston, treasurer of the Merrimac Mfg. Co., Lowell, has succeeded Eliot C. Clarke as treasurer of the Lowell (Mass.) Bleachery and Dye Works.

—John D. Taylor, overseer of the spinning department at the Flint Mills, Fall River, Mass., has resigned.

—J. M. Williams has secured the superintendency of the new Cora Mill, Kings Mountain, N. C.

—Agent F. T. Walsh of the Lowell (Mass.) Bleachery and Dye Works, has resigned, and has accepted a responsible position with Thomas Leland & Co., Boston, importers of chemicals and dyestuffs.

—W. D. Wyman is now overseer of spinning at the Forestdale Cotton Mills, Forestdale, R. I.

—C. H. Weymouth has resigned the position of overseer of spinning in the Great Falls Mfg. Co., Somersville, N. H., a position which he has occupied for over thirty years.

Woolen.

—Charles Bigelow, the new superintendent and part owner of the mill of the Haile & Frost Mfg. Co., at Hinsdale, N. H., has entered upon his new duties. Mr. Bigelow has had a large experience in the manufacture of woolen goods. He was for some years associated with the Edward Harris Mills at Woonsocket, R. I. and latterly has been at the head of the large mill in Sabbattus, Me.

—Samuel Booth, overseer of spinning for the last fifteen year for John H. Dearnley, Philadelphia, has resigned in order to accept a similar position with Folwell Bro. & Co., in that city.

—Theodore G. Beckert, designer of the Georges River Woolen Mill at Warren, Me., is meeting with very good success. He served a long time in industrial schools and graduated from the high school of designing and manufacturing at Werdan, Saxony, where he won first prize for original designs and fabrics. He is now working on his forthcoming book, "Beckert Theory and Technology of the Art of Designing Plain Woolen and Worsted Goods."

—Joseph Boothroyd, superintendent of John Baird & Co.'s woolen mill, Almonte, Ontario, Canada, has resigned to accept a similar position with the Excelsior Mills, Montreal, P. Q.

—Edward Bond, recently boss finisher for the Hanover (Ill.) Woolen Co., has resigned, on account of the mills running slack, and returned to Waterloo, N. Y.

—J. S. Crowther, boss dyer at the Manhattan Print Works, Passaic, N. J., has resigned, after a service of seven years on plushes and low grade satinets, to take a much needed rest.

—R. A. Clogher, superintendent of the Haile & Frost Mills, at Hinsdale, N. H., recently resigned.

—Isaac Cooper has terminated his labors as section boss in the spinning department at the Chautauqua Worsted Mills, Jamestown, N. Y. He is now engaged with William Broadhead & Sons, at Jamestown.

—Fred Church, late overseer of weaving at the Baltic Mills, Enfield, N. H., has gone to the Mascoma Mill at Lebanon, N. H.

—F. Demers, of Warren, Me., has accepted a position as dyer for the Riverside Mill, Pittsfield, Me.

—John F. Dustin, of Andover, Mass., is now boss fixer for the Bay State Worsted Co., Worcester, Mass.

—M. Drexler has been engaged by the Toronto (Canada) Carpet Co., as overseer of dyeing. He was formerly employed in a similar capacity by the Way Mfg. Co. and Joseph Taylor, Philadelphia.

—W. W. Edes, for some time foreman in the dye house of the Penobscot Woolen Co., Dexter, Me., has gone to Sangerville, Me.

—F. H. Fairgrieve, overseer of weaving, after six years of service in George E. Kunhardt's mill, Lawrence, Mass., has resigned. His successor is Benjamin Lee, who was employed in the same capacity at the mill prior to Mr. Fairgrieve coming there.

—Duncan Forsythe, boss carder at the McFarland Mills, West Conshohocken, Pa., recently resigned.

—George Fisher, formerly overseer of carding in the Danville (Ill.) Woolen Mills, is now engaged in a similar capacity with the Springfield (Ill.) Woolen Mills.

—Edward Flannigan has accepted the position of boss finisher at the Ray Woolen Mills, Franklin, Mass.

—George W. Gerry, of the Burlington Woolen Mills, Winooski, Vt., has taken a position as overseer of carding, spinning and picking in the woolen department of the Montmorency Woolen Mills, Montmorency, P. Q.

—James Griffin has been engaged as boss weaver at the E. Kenyon & Son Woolen Mill, Kenyon, R. I.

—William Greene, who has been overseer of finishing at the Conshohocken Woolen Mills, West Conshohocken, Pa., since last January, has recently resigned his position.

—Arthur Generux, formerly of the Jesse Eddy Mills, Fall River, Mass., has taken charge of the finishing at the Puritan Mills, Plymouth, Mass.

—Asa Hind has been appointed superintendent of the new Falconer Worsted Mills at Jamestown, N. Y.

—Benjamin Horsfall, late at South Windham, Me., has taken a position as boss dyer at the Assabet Mills, Maynard, Mass.

—Thomas Heines has been engaged by Beswick & Kay as overseer of carding in the Fairmount Spinning Mills, Philadelphia, Pa.

—T. Halpin, formerly employed in the dressing department at the Assabet Mills, Maynard, Mass., has accepted a position as overseer of dressing at the Tingue Mfg. Co.'s mill, Seymour, Conn.

—Joseph Krugon, formerly of the Amsterdam Woolen Mills, Amsterdam, N. Y., is now filling the position of boss carder at the Ounegan Woolen Mill, Oldtown, Me.

—R. Laycock has succeeded J. Binner as boss spinner at the Washington Mills, Lawrence, Mass.

—James Lacey has resigned his position in charge of the carding and combing at the Chautaqua Worsted Mills, Jamestown, N. Y., and returned to Philadelphia.

—Edward Long has resigned his position at the Collins Mill, Gilsum, N. H., to become boss carder at the West Swanzey Woolen Mills, West Swanzey, N. H., succeeding Mr. Young.

—J. H. McSorley is now filling the position of boss carder at the Morrison Woolen Mill, Dexter, Me.

—John McCalley is now boss finisher at the Anderson Mills, of the American Woolen Co., Skowhegan, Me.

—Michael W. McCarthy, boss carder, has changed from Cleveland, O., to Lawrence, Mass.

—Charles McDougall has resigned as superintendent of the Charles River Co.'s mill at North Bellingham, Mass.

—Albert Newbury, formerly second-hand of dyeing at the Goninc Mfg. Co., Goninc, N. H., has resigned to take charge of the dye house at the mill of Walter Scott, Saugus, Mass.

—William E. Owens, formerly boss carder of Cole, Senior & Co.'s woolen mill Medway, Mass., has resigned his position as boss carder of the Otrobando Woolen Co.'s mill at Norwichtown, Conn., and has entered the employ of the Walhalla Co., of Walhalla, S. C., in a similar position.

—James Pugh, boss carder, has severed his connection with the Amsterdam Woolen Co., Amsterdam, N. Y.

—Daniel Pendergast, a well-known felt manufacturer, who was assistant manager with his brother of the Armour Felt Works, Chicago, Ill., up to the time they were destroyed by fire, has accepted the general management of the Samuel Williams' felt mills at Byfield, Mass. John Supples, a felt dyer, who was with Mr. Pendergast at the Armour Mills, has accepted a position as overseer of dyeing at the mills at Byfield.

—Charles Platt, late superintendent at Beaver Dam, Wis., has accepted a simiarl position with Rochester Woolen Mills, Rochester, Minn.

—Jesse Pollard, for many years superintendent of the Norwalk Mills Co., of Winnipauk, Conn., having felt, from continued ill health, unable to continue his very active employment, resigned his position Oct. 1st. Mr. Pollard had been associated in various capacities with the Norwalk Mills Co., since 1865, and always filled his responsible positions with great honor to himself and much success to the corporation he served. All his friends wish him much comfort in his vacation, and a speedy return to vigorous health and usefulness.

—George Phetteplace, for the last three years with the Chautauqua Worsted Mills, Jamestown, N. Y., is now engaged in the spooling department at the Falconer Worsted Mills, in that city.

—P. Quinn has succeeded W. G. Fraatz, who lately resigned as boss finisher at the Middlesex Mills, Lowell, Mass.

—Thomas F. Ryan, for some time finisher for the Melrose Woolen Co., of Auburn, N. Y., is now boss finisher for the Ramshorn Manufacturing Co., West Millbury, Mass.

—J. T. Reilly has severed his connection with the Middlesex Co., Lowell, and has taken the position of boss finisher at the Robinson Mill, South Windham, Me.

—Mr. Ravenscroft, formerly employed as overseer of carding by the Commercial Knitting Co., Troy, N. Y., and William Barnet, shoddy manufacturer at Albany, N. Y., is now overseer of carding for F. C. Huyck & Sons, at Rensselaer, N. Y.

—William Rogers, late of the Chautauqua Worsted Mills, is now engineer at the Falconer Worsted Mills at Jamestown, N. Y.

—Elwood Smith, overseer of wool carding for Folwell Bro. & Co., Philadelphia, has been succeeded by Florence McCarthy, overseer of worsted carding, who will have full charge of both wool and worsted carding hereafter.

—Solomon Scheuerman is now superintendent of the Capital City Woolen Mills, owned by Scheuerman Bros., Des Moines, Iowa. He succeeded W. R. Dredge, resigned.

—Thomas Sexton has given up his position as second-hand in the carding department of the Saranac Mill, Blackstone, Mass., to accept a position as overseer of carding at Franklin, Mass.

—Elwood Smith, boss carder at the Collingwood Mills, Philadelphia, Pa., has resigned.

—James Toas has secured the position of boss weaver with C. A. Root & Co., Uxbridge, Mass.

—Herbert Taylor has recently secured the position of boss carder with George McFarland, Gulf Mills, Pa.

—Harry Taylor, formerly overseer of carding with William S. Davis, carpet yarn spinner, Manayunk, Philadelphia, is now engaged with the Krook & Bruch Co., Ltd., Philadelphia.

—E. G. Taintor, of Lowell, from the Burlington Woolen Co., Burlington, Vt., has been appointed finisher by the Conshohocken Woolen Co., at West Conshohocken, Pa., which has started up in full recently, with a government contract and other work.

—Andrew C. Wilson, formerly boss weaver at the E. Kenyon & Son mill, of Kenyon, R. I., has accepted a position as boss weaver at the Edward Hargraves Woolen Mill, North Shapleigh, Me.

Knit.

—Joseph Burns, late overseer of carding with the Faith Knitting Co., Averill Park, N. Y., has been succeeded by George Spencer, formerly boss carder with F. C. Huyck & Sons, Rensselaer, N. Y.

—Fred Barker, formerly night carder in Robert MacKinnon's Knitting mills at Little Falls, N. Y., has returned from a trip to England and the Paris Exposition and accepted a position in the carding department of the Eagle Knitting Mills, Little Falls, N. Y., Titus Sheard & Co., proprietors.

—James Cavanaugh, who has been boss dyer at the Walter Aiken's Sons' hosiery mills, Franklin Falls, N. H., for twenty years, has severed his connection with that concern.

—M. F. Daly has been engaged as overseer of carding with the Oneita Knitting Mills, at Utica, N. Y.

—James Monahan, night carder with the Gilbert Knitting Mills, Little Falls, N. Y., has resigned.

—John Nield, recently employed in the dyeing department of the American Worsted Co.'s mills, Woonsocket, R. I., is now overseer of dyeing for the Woonsocket Knitting Co., Woonsocket, R. I.

—George Spencer, who recently resigned as overseer of carding for F. C. Huyck & Sons, Rensselaer, N. Y., manufacturers of paper maker's felts, has accepted a similar position with the Faith Knitting Co., Averill Park, N. Y., succeeding Joseph Burns.

—Theo. P. Talpey, late of Passaic, N. J., has recently accepted the position of boss dyer with the Des Moines Hosiery Mills, Des Moines, Iowa.

—Murray Schyner succeeds James Cavanaugh as boss dyer at the mill of Walter Aiken's Sons, Franklin Falls, N. H.

Silk.

—A. W. Greene, paymaster at the silk mill of Cheney Bros., South Manchester, Conn., has resigned after sixteen years of service with the company. He intends later to engage in the lumber business in New York with his brother-in-law.

—Sydney H. Souter, for three years superintendent of the Dery Silk Mill, Catasauqua, Pa., has resigned to accept the position of general manager of the new Monarch Silk Mills at York, Pa., in which will be manufactured only broad silks. The mill will be in operation before Christmas, and will give employment to between 200 and 250 hands.

Deaths.

—George Campbell, a widely known knitting machinery manufacturer and one of the most prominent citizens of Cohoes, N. Y., died September 24th. Born in Montreal, Canada, in 1829, he came to Waterford at the age of 18 years, and there learned his trade, that of a machinist. In January, 1863, he entered into partnership with John Clute, and manufactured knitting machinery, winders, shafting and other kinds of machinery, and remained in partnership up to the time of his death. Mr. Campbell was also in the knit goods business. He was for a time president of the Ranken Knitting Co., and was also president of the Atlantic Knitting Co., having been connected with the latter concern during the 10 years previous to his death. He is survived by his wife, one daughter and two grandchildren.

—Ernest Keller, a member of the firm of John J. Keller & Co., importers and dealers in dyestuffs, of New York, died last month at his home in Brooklyn. Mr. Keller was in his forty-sixth year, and since the death of the senior member of the firm, some years ago, had carried on the business with his brothers, Messrs. A. D. and R. J. Keller.

—James Renfrew, a prominent cotton manufacturer, died of heart failure at his home in Adams, Mass., September 28th, suddenly. He was born in Scotland in 1840, and at the age of 10 years came to America. Upon leaving school he was engaged as bookkeeper at the Taconic Mills of Pittsfield. In 1867 he took charge of the dyehouse of the Broadley Co., at Adams. Several years later the Renfrew Mfg. Co. was formed by Mr. Renfrew and others with whom he had been associated, and he was first appointed agent and manager of the new corporation and afterwards treasurer, holding these offices at the time of his death. In addition to his active duties in connection with the manufacturing company, Mr. Renfrew was president of the First National Bank of Adams and also of the Holyoke Warp Co., at Holyoke. His death was keenly felt by a large number of social and business friends.

—Arba Covel Slater, superintendent of the Linwood Cotton Mills at Whittinsville, Mass., died on September 3, aged 76 years. Mr. Slater served as superintendent of the Linwood Mills from 1867 to the time of his death.

—Joseph Ramsbottom, 50 years of age, died at his home in Fall River. He was a well-known property owner in that city, and had held the position of overseer in the Granite Mills for a period of 25 years.

—William E. Wright, aged 34, of the firm of James Wright & Son, yarn manufacturers of Philadelphia, Pa., died in the Philadelphia Hospital, recently.

—Augustus Canis, who had been connected with the Amoskeag Corporation, Manchester, N. H., for more than 40 years, the most of that time as overseer, died at his home in that city last month.

—Fred Burgess, overseer of the weaving department at the Wauregan Mills, Wauregan, Conn., died recently after a short illness.

—Benjamin Schofield, a retired manufacturer of yarns at Philadelphia, Pa., died recently at his home in that city, in his eightieth year. Together with his brother, he established the American Knitting Mills at American and Jefferson Sts., and in 1885 retired from active business.

YOU PAY NOTHING FOR CLING-SURFACE UNTIL IT HAS FIRST PAID FOR ITSELF:

CLING-SURFACE will stop every belt you have from slipping.

Allow all to run easy.
Increase power at least 15%.
Preserve your belts.

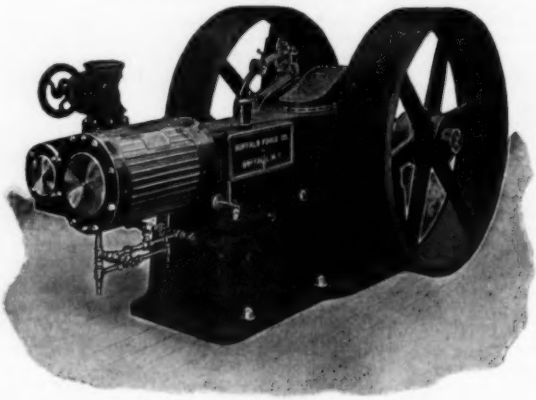
If it does not do these you need pay us nothing for your order, and we pay charges both ways. You cannot lose, why won't you make a trial?

CLING-SURFACE MFG. CO.,
190-205 VIRGINIA ST.,
Buffalo, N.Y

BOSTON, NEW YORK, PHILADELPHIA, CHICAGO, ST. LOUIS, NEW ORLEANS.

Buffalo Engines for Lighting and Power in Mills and Factories.

Arranged for Direct Connection to any Standard Dynamo.



Buffalo Horizontal Engine Running in Oil.

★ ★ ★ ★

Horizontal
Vertical
Simple
Compound

Compact
Durable
Efficient
Powerful

★ ★ ★ ★

Buffalo Forge Company, BUFFALO, N. Y.

NEW YORK. CHICAGO.

BUYERS' INDEX.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Air Moistening System.
American Moistening Co., 150 Devonshire St., Boston.

Appraisals.
American Appraisal Co, Milwaukee, and 804 Park Row Bldg, New York.

Arc Lamps.
Lea Manufacturing Co., Elwood, Indiana.

Architects and Mill Engineers.
Berlin Iron Bridge Co. The, East Berlin, Ct.
Ferguson, John W., Paterson, N. J.

Artificial Stone.
Warren Bros. Co., 143 Federal St., Boston.

Asphalting & Asphalt Materials.
Warren Bros. Co , 143 Federal St., Boston.

Asphalt Roofing.
Warren Bros. Co., 143 Federal St., Boston.

Automatic Feeds for Cotton and Wool.
Atlas Foundry & Mch. Co., Newark, N. J.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Balling Machine.
Torrance Mfg. Co, 18 Davis St, E. Newark, N. J.

Bandings.
See under Yarns.

Belt Cover.
Warren Mfg. Co., Chicago, Ill.

Belting.
Alexander Bros., 410 No. 3d St., Phila., Pa.
Boston Belting Co., Boston, Mass.
Jeffrey Manufacturing Co., Columbus, Ohio.
Link Belt Machinery Co., Chicago, Ill.
Popham, Henry, & Son, Newark, New Jersey.
See also Mill Supplies.

Belt Dressing.
Alexander Bros, 410 No. 3d St, Phila, Pa.
Cling Surface Co., 168 Virginia St., Buffalo, N. Y.
Stephenson Mfg, Co., Albany, N. Y.
Warren Mfg. Co., Chicago, Ill.

Belt Hooks.
Bristols Co., Waterbury, Ct.

Bindings.
See Tapes and Braids.

Bleaching Materials.
Bosson & Lane, Boston.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Blowers.
American Blower Co., Detroit, Mich.
Boston Belting Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
New York Blower Co., New York.
Sturtevant, B. F. Co., Boston, Mass.

Bobbins, Spools, Shuttles, Etc.
Crandall, G. H. & Co., Cohoes, N. Y.
Murray, C. O., Nashua, N. H
Parker, Henry Co, Springfield, Vt.
Sweet & Doyle, Cohoes, N. Y.
Tebbets, E. L., & Co., Locke's Mill, Me.

Boilers.
See Steam Boilers.

Boiler Compounds.
Straus & Co., 59 Broad St., New York.

Boiler Tube Cleaners.
Coggeshall Mfg. Co., 130 1-2 Liberty St., New York.

Boxes, Cloth Boards, Etc.
Pearson, J. T, Kensington, Pa.

Braiding Machinery.
New England Butt Co., Providence, R. I.
Thun & Janssen, Reading, Pa.

Braids.
See Tapes, Braids and Edgings.

Brass (Perforated.)
See under Perforated Metal.

Bridges.
American Bridge Co., The, New York.

Brushes.
Felton, S. A. & Son Co., Manchester, N. H.

Brushers
See Napping Machines.

Buildings (Steel).
American Bridge Co., The, New York.

Burr Pickers.
Atlas Foundry & Mch. Co., Newark, N. J.
Curtis & Marble Machine Co., Worcester Mass.
Sargent's, C. G., Sons, Graniteville, Mass.

Calico Printers' Machinery and Supplies.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers, Somerville, Mass.
Butterworth, H. W., Sons & Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.
Taunton New Bedford Copper Co., New Bedford, Mass.
Rusden Machine Co., Warren, R. I.
See also Dyeing, Bleaching Machinery, etc.

Carbonizing.
Philadelphia Wool Scouring & Carbonizing Co., Philadelphia, Pa.

Card Clothing.
Ashworth, Elijah, Fall River, Mass.
Booth, Benj. & Co., Philadelphia.
Buck Card Clothing Co., Palmer, Mass.
Leigh, Evan A, 35 Mason Building, Boston.

Card Grinding Machinery.
Hardy Machine Co., Biddeford, Me.
Roy, B. S. & Son, Worcester, Mass.

Carders' Tools.
Brown, W. H, Mechanic St, Worcester Mass.

Carpet Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
Curtis & Marble Machine Co, Worcester, Ms.
Furbush, M. A, & Son, Machine Co, Phila, Pa.
Granger Foundry & Machine Co., Providence, R. I.
Howard, Geo. C., 1783 Barker St., Phila., Pa.

Cement "Dealers."
Warren Bros. Co., 143 Federal St., Boston.

Check System.
Foster, E. H. & Co., Cohoes, N. Y.

Chemicals and Apparatus.
Bullock & Crenshaw, 528 Arch St, Phila, Pa.
Roessler & Hasslacher Chemical Co, 100 William St, New York.

Clutches.
American Tool & Machine Co., Boston, Mass.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., The, New Haven, Conn.
Hunter, James, Machine Co., North Adams, Mass.

Warren's Pulley Cover

REGISTERED WARREN TRADE MARK WARRANT

"Power is Money" Therefore Power Saved is Money Earned.

It Prevents Your Belts From Slipping.

REGISTERED WARREN TRADE MARK WARRANT

"Power is Money" Therefore Power Saved is Money Earned.

The leather in belts is much like the human hand; that if we had to push these pulleys with our hands we want them covered so that we could expend our energies in turning these pulleys and not waste them in trying to grip the surface that is not fitted to grip.

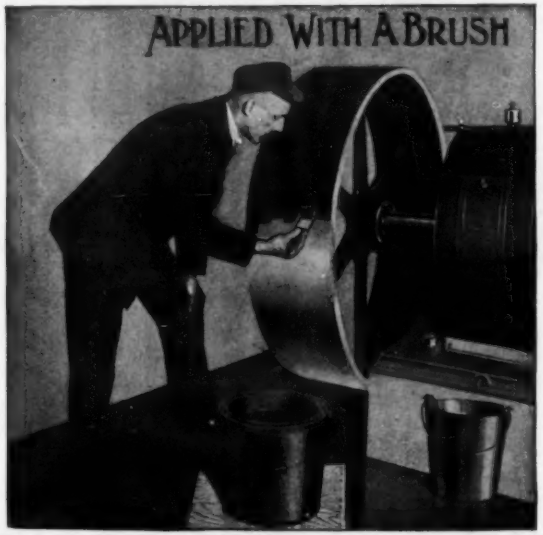
Splice your BELTS with WARREN'S

Short-Splice Belt Cement

Shipped in 5 to 50 lb. packages at 50 cents per lb.

Used by U. S. Navy

Gives Your Pulleys Leather-Like Surfaces



LASTS FOR YEARS

We offer you a trial case of Warren's Pulley Cover, together with a brush and full instructions for application, at the delivered price of $12. **You Need Not Remit** if your report, which you will make after a fair trial, at the expiration of 30 days, shows the cover to be not as represented.

It Does Not Make Your Belts Cling To Your Pulleys

It Does Not Make Your Belts Stick To Your Pulleys

Preserve your BELTS by using WARREN'S

Life of Belting

Shipped in 25 and 35 lb. cans at 19 cents per lb.

REGISTERED WARREN TRADE MARK WARRANT

"Power is Money" Therefore Power Saved is Money Earned.

It Allows Your Belts To Run Slack.

REGISTERED WARREN TRADE MARK WARRANT

"Power is Money" Therefore Power Saved is Money Earned.

Manufactured by THE WARREN COMPANY (Incorporated), 34 Jackson St., Chicago, Ill.

Combs (Wool and Cotton).
Crabb, William, & Co, Newark, N. J.
Townsend, Thomas, 157 Orange St., Providence, R. I.

Commission Merchants (Dry Goods, Knit Goods).
Hirschman, H. 419 Broome St., New York.

Concrete.
Warren Bros. Co., 143 Federal St , Boston.

Conveying Machinery and Chains.
Jeffrey Manufacturing Co., Columbus, O.
Link Belt Machines Co., Chicago, Ill.

Copper (Perforated.)
See under Perforated Metal.

Copper Print Rollers.
Phillips Co, The Thomas, Providence, R. I.
Taunton New Bedford Copper Co , New Bedford, Mass.

Copper Work for Dyers.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co , Providence, R. I.
Phillips Co, The Thomas, Providence, R. I.

Corrugated Iron Shutters.
American Bridge Co., New York.

Cotton (Egyptian).
Stoddard, Haserick, Richards & Co., Boston.

Cotton Elevators.
Buffalo Forge Co., Buffalo, N. Y.
Link Belt Machines Co., Chicago Ill.

Cotton Machinery.
Altemus, W. W, & Son, 2816 N. 4th St, Phila. Pa.
Ashworth, Elijah, Fall River, Mass.
Butterworth, H. W. & Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Draper Company, Hopedale, Mass.
Easton Burnham Co., Pawtucket, R. I.
Fairmount Machine Co, 22d and Wood Sts, Philadelphia.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A, 35 Mason Building, Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
McKerrow, H. G & Co., Boston, Mass.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I.
Ring Frame Thread Protector Co., The Amsterdam, N. Y.
Schofield, Geo. L., Philadelphia.
Stoddard, Haserick, Richards & Co, Boston, Mass.
Whitin Machine Wks, Whitinsville, Mass.
Woonsocket Machine & Press Co, Woonsocket, R, I.

Cotton Openers and Lappers.
Howard & Bullough American Machine Co, Pawtucket, R. I.

Credits.
National Mercantile Agency, New York and Boston.

Cutters for Knit Fabrics.
Kennedy, Thos. (Cutters, etc.,) Cohoes, N. Y.

Decoration Wash for Interiors.
De Ronde, F. S, Co., 54 John St., New York.
Moore, Benj. & Co., Brooklyn, N. Y.

Dextrine.
Stein, Hirsh & Co, 165 Duane St., New York.

Dryers.
Antisdel, E. M., 12 Miller St., Utica, N. Y.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers. Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Kenyon, D. R. & Son., Raritan, N. J.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co, Philadelphia, Pa.
Phillips Co, The Thomas, Providence, R. I
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Dusters.
See Wool and Waste Dusters.

Dyers, Bleachers and Finishers.
American Yarn Printing Works, 134-150 North 22d St., Philadelphia.
Brophy's, T, Sons, Jasper St, Philadelphia
Capstick, John & Sons, Montville, N. J.
Cohoes Dye Works, Cohoes, N. Y.
Cranston Worsted Mills (yarns), Bristol, R. I.
Davidson & Brooke, 2560 No. 3d St., Philadelphia.
Duncan & Baillie, Cohoes, N. Y.
Firth & Foster Co, Kensington, Pa.
Greenwood, R, & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Littlewood. G. J., & Sons, Manayunk, Pa.
Lorimers, The Wm. H. & Sons Co., Phila.
Molt Bros., Millbury, Mass. (Indigo Blue.)
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Philadelphia Linen Finishing Co., Frankfort, Philadelphia.
Rowland, Samuel, Schuylkill Haven, Pa.
Warren, W, Thread Works, Westfield, Mass.

Dyeing, Drying, Bleaching and Finishing Machinery.
Antisdel, E. M., 12 Miller St., Utica, N. Y.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Bros., Somerville, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Butterworth, H. W, & Sons Co Phila Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Delahunty Dyeing Machine Co., Pittston, Pa.
Fairmount Machine Co, 22 and Wood Sts. Philadelphia.
Frank's Wagon Works, 2731 N. 6th St , Philadelphia.
Granger Foundry & Machine Co, Providence, R. I.
Hopkins, Machine Works, Bridgeton, R. I.
Howard, Geo. C., 1733 Barker St., Phila., Pa.
Kenyon, D. R. & Son, Raritan, N. J.
Knapp, C. H., Paterson, N. J.
Lincoln, The, Co, 54 Arch St, Hartford, Ct.
Parks & Woolson Machine Co., Springfield, Vt.
Peel, Samuel H. Germantown, Philadelphia Pa.
Phenix Iron Foundry, Providence, R. I.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia, Pa.
Philadelphia Textile Machinery Co, Hancock and Somerset Sts, Philadelphia, Pa.
Phillips, The Thomas Co, 91-95 South Main St, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Webendorfer & Walling, Paterson, N. J.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Dye House Cans.
Hill, James Mfg. Co., Providence, R. I.

Dyehouse Floors.
Warren Bros., 143 Federal St., Boston.

Dye Sticks,
Bailey, Frank, Cedar Brook, New Jersey.
Haedrich, E. M , Philadelphia, Pa.

Dyestuffs and Chemicals.
American Aniline Co., 163 No. Front St., Philadelphia.
Anchor Color Mfg. Co, 464 Cherry St, New York.
Atteaux, F. E. & Co., 174-176 Purchase St., Boston.
Berlin Aniline Works, 72 Front St., N. Y.
Bischoff, & Co, 87 Park Place, N. Y.
Bosson & Lane, 36 Central Wharf, Boston.
Corey, S. J, 273 Congress St, Boston.
Dillon & Co, 20 Cedar St, New York.

Farbenfabriken of Elberfeld Co, 40 Stone St, N. Y.
Geisenheimer & Co, 189 Front St, New York.
Innis & Co, 3 Cedar St, New York.
Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 22 Dey St, N. Y
Johnson, Wm. G, & Co, Uncasville, Conn.
Jones, J. Howell, 18 Burling Slip, New York.
Keller, John J, & Co, 104-106 Murray St, N. Y.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Koechl, Victor, & Co, 122 Hudson St, N. Y.
Kuttroff, Pickhardt & Co., New York.
Matheson, W. J, & Co, 182-184 Front St, N.Y.
Merrimac Chemical Co, Boston, Mass.
Molt Bros., Millbury, Mass. (Indigo Blue.)
N. Y. & Boston Dyewood Co, 55 Beekman St, New York.
Oakes Mfg. Co, 93 Pearl St, N. Y.
Roessler & Hasslacher Chemical Co, 100 William St., New York.
Schoellkopf, Hartford & Hanna Co., Philadelphia.
Sharpless Dye Wood Ext. Co, The Bourse, Phila, Pa.
Stamford Mfg. Co, 133-137 Front St., N. Y.
Sykes & Street, 85 Water St, N. Y.
Thayer, Ed. M., 106 Broad St., Boston, Mass.

Dynamos.
Sturtevant, Co., B. F. Boston.

Edgings.
See Tapes, Braids and Edgings.

Elastic Web Calendering Machines.
Knapp, C. H., Paterson, N. J.

Electrotyping and Printing.
Whitcomb, H. C, & Co, Boston.

Elevators.
Cohoes Foundry & Machine Co, Cohoes, N.Y.
Eastern Machinery Co, The, New Haven, Conn.
Jeffrey Manufacturing Co., Columbus, O.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Humphrey, S. K., 53 State St., Boston.

Electrical Construction.
Philadelphia Electric Construction Co., Philadelphia.

Electric Fans.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Electric Motors.
Sturtevant Co., B. F., Boston.

Engine Foundations.
Warren Bros. Co., 143 Federal St., Boston.

Engineers, Mechanical.
American Bridge Co., The, New York.
Ferguson, John W. Paterson, N. J.
Rittenhouse, Frank, Norristown, Pa.

Exhaust Heads.
Burt Manufacturing Co., Akron, Ohio.

Fans—Exhaust and Ventilating.
See Ventilating Apparatus.

Feed Water Heaters.
Pendleton, Walter & Co., New York.

Feed Water Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Phœnix Iron Foundry, Providence, R. I.

Finishing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Fireproof Construction.
American Bridge Co., The, New York.

Fluted Rolls.
Cohoes Foundry & Machine Co, Cohoes, N.Y
Thurston, A. G, & Son, Box 528, Fall River Mass.

Forges.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Friction Clutches.
See Clutches.

Friction Hoisting Drums.
Eastern Machinery Co., New Haven, Conn.

Fulling Mills for Woolen Goods.
Frank's Wagon Works, 2731 N. 6th St., Philadelphia.
Hopkins, Machine Works, Bridgeton, R. I.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter Jas, Machine Co, No. Adams, Mass.
Kenyon, D. R. & Son, Raritan, N. J.

Gas Engines.
Jones, Lewis, 60½ and Media Sts, Phila, Pa.

Gas Exhausters.
Sturtevant Co., B. F., Boston.

Gear Cutting Machine.
Whiton, The D. E, Co, New London, Conn.

Generating Sets.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Heating.
See Ventilating.

Heddles.
Watson, L. S, Mfg. Co, Leicester, Mass.

Hoisting Machinery.
The Eastern Machinery Co., New Haven, Conn.

Hose.
Boston Belting Co., Boston.

Hosiery Boards.
Pearson, J. T, Kensington, Pa.

Humidifying Apparatus.
American Air Moistening Co., Boston.

Hydro Extractors.
American Tool & Machine Co , Boston.
Rusden Machine Co., Warren, R. I.
Webendorfer & Walling, Paterson, N. J.

Knit Goods Edgings, Trimmings, etc.
Cathcart, John & Co., 115 Franklin St., New York.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Friedberger & Co, Edgings, Germantown Phila, Pa.
Fleming & Chapin, Philadelphia.
Hepner & Horwitz, Lacings, 30 Howard St, N. Y.
Kavanaugh, Geo. W., Cohoes, N. Y.
Krout & Fite Mfg. Co, Allegheny Ave. and Emerald St., Phila.
Schneebeli, G. A. & Co., Nazareth, Penn.
Weimar Bros, 1817 East York St, Phila. Pa.

Knit Goods Finishing Machines, Crochet, Etc.
Eclipse Machine Co., Sanquoit, N. Y.
Industrial Mfg. Co., Camden, N. J.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 2079 E. Cumberland St, Phila Pa.
Willcox & Gibbs Sewing Mch. Co., New York.

Knitting Machine Cylinders.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Rittenhouse, Frank, Norristown, Pa.
Stafford & Holt, Little Falls, N. Y.

Knitting Machinery.
American Knitting Machine Co., Woonsocket, R. I.
Beattie, Wm. & Son, Cohoes, N. Y.
Branson Machine Co., 506 John St., Philadelphia.
Campbell & Clute, Cohoes, N. Y.
Cooper, Chas, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Excelsior Knitting Machine Manufacturing Co., Allentown, Pa.
Fisher Ktg Mch. Co., Utica, N. Y.
Hepworth & Co, Lehigh Ave. and Mascher St, Phila, Pa.
Jenckes, E. Mfg. Co, Pawtucket, R. I.
Jones, Lewis, 60 1-2 and Media Sts, Philadelphia, Pa.
Kennedy, Thos. (Cutters, etc.), Cohoes, N. Y.
Leighton Machine Co, Manchester, N. H.
Lindley, Geo. W., 5122 Wakefield St., Germantown, Pa.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
McMichael & Wildman Mfg. Co, Norristown, Pa.
Mueller, Arthur, 760 Lexington Avenue., Brooklyn, N. Y.

Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 127 Bread St, Phila, Pa.
Pepper Mfg. Co, Lakeport, N. H.
Scott & Williams, 2079 E. Cumberland St., Phila., Pa.
Snyder, Homer P. Mfg. Co. Little Falls, N. Y.
Stafford & Holt, Little Falls, N. Y.
Taylor, James, 835 Arch St., Philadelphia.

Knitting Needles and Supplies.
Breedon, Wm, & Son, Amsterdam, N. Y.
Cooper, Chas, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Crane Mfg. Co., Lakeport, N. H.
Dodge Needle Co., Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Kavanaugh, Geo. W., Cohoes, N. Y.
Lydall, H, & Foulds, Manchester, Conn.
Manufacturers' Supplies Co., 66 No. 4th St. Philadelphia.
Mayo Knitting Machine & Needle Co, Franklin, N. H.
Page Needle Co, Chicopee Falls, Mass.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.

Laboratory Outfits.
Bullock & Crenshaw, 528 Arch St. Phila, Pa

Looms.
Crompton & Knowles Loom Works, Worcester, Mass.
Draper Company, Hopedale, Mass.
Fairmount Machine Works, 22d and Wood Sts. Philadelphia.
Furbush, M. A, & Son Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St, Phila., Pa. (For wire.)
Kilburn, Lincoln & Co, Fall River, Mass.
Leigh, Evan A., 35 Mason Bldg., Boston.
Lowell Machine Shop, Lowell, Mass.
Mason Machine Works, Taunton, Mass.
Whitin Machine Works, Whitinsville, Ms,
Woonsocket Machine & Press Co, Woonsocket, R. I.

Lubricators.
Ameledema Oilless Bearing Co., Berkeley St, Wayne Junction, Philadelphia.
Dixon, Jos., Crucible Co, Jersey City, N. J.

Lumber.
Stearns, A. T, Lumber Co, Neponset, Mass.

Lumpers.
Gerry, George, & Son, Athol, Mass.

Machinery Dealers.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Schofield, Geo. L. Phila., Pa.
Taylor, James, 835 Arch St., Philadelphia.

Machinists' Tools.
Dodge Mfg. Co., Mishawaka, Ind.
Whiton, The D. E. Co, New London, Conn.

Mails.
Walder, J, Paterson, N. J.

Mechanical Draft.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Sturtevant Co., B. F., Boston.

Measuring and Folding Machines.
Curtis & Marble Machine Co, Worcester, Ms.
Elliott & Hall, 544 Hermon St, Worcester Mass.
Fabric Measuring & Packaging Co., Postal Telegraph Bldg, New York.

Mercerizing Machinery.
Butterworth, H. W. & Sons, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Rusden Machine Co., Warren, R. I.

Mill Brushes.
See Brushes.

Mills For Sale.
Denny, R. B., 143 Federal St., Boston.

Mill Builders and Engineers.
American Bridge Co., The, New York.
Ferguson, John W, Paterson, N. J.

Mill Supplies.
American Supply Co, Providence, R. I.
Bamford & Smith, Pascoag, R. I.
Bristol, The, Co., Waterbury, Conn
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Dixon Lubricating Saddle Co., Bristol, R.I.
Easton-Burnham Co., Pawtucket, R. I.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Jeffrey Manufacturing Co., Columbus, O.
Sweet & Doyle, Cohoes, N. Y.
Thurston, A. G, & son, Fall River, Mass.
Watson, L. S, Mfg.Co, Leicester, Mass.

Napping Machines.
American Napping Machine Co, Williamstown, Mass.
Ardrey, S. B, & Sons, Bristol, Pa.
Curtis & Marble Machine Co, Worcester, Mass.
Jones, Lewis, 60 1-2 and Media Sts., Philadelphia, Pa.

Neck Shaping Machine.
Eclipse Machine Co., Sanquoit, N. Y.

Noils (Silk.)
Ryle, Wm. & Co., 54 Howard St., N. Y.
Malcolm Mills Co., Frankford, Pa.

Numbering Machine.
Bates Machine Co., 346 Broadway, New York.

Oil Filters.
Burt Manufacturing Co., Akron, Ohio.

Packing.
Boston Belting Co, Boston.
Jenkins Bros., New York.

Paint.
DeRonde, F. S. Co, 54 John St., New York City.
Moore, Benj. & Co, Brooklyn, N. Y.

Painting and Whitewashing Machine
Triumph Machine & Manufacturing Co. 209 Hester St., New York, N. Y.

Pantagraphs for Mill Engraving.
Johnson, C. A, & Co, 22 Dey St, New York.

Patent Solicitors.
Crosby & Gregory, 34 School St, Boston, Mass.
Siggers, E. G., Washington, D. C.

Pavers & Paving Materials.
Warren Bros. Co., 143 Federal St., Boston.

Perforated Metal.
American Perforated Metal Co., 171 Wooster St., New York.
Beckley, A. J. & Co., Garwood, N. J.
Harrington & King Perforating Co., 230 North Union St, Chicago. Ill.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co., 100 William St, New York.

Picker Sticks.
Loom Picker Co., Biddeford, Me.

Picking, Carbonizing and Garnetting.
Garfield Woolen Co, Garfield, N. J.

Pipe Covering.
Keasby, R. A, 83 Warren St, New York.

Pneumatic Conveying.
See Ventilating.

Power Transmitting Machinery.
Ameledema Oilless Bearing Co, 149 West Berkley St, Wayne Junction, Pa.
Christiana Machine Co., Christiana, Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co, New Haven, Conn.
Fairmount Machine Works, 23d and Wood Sts, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jeffrey Manufacturing Co., Columbus, O.
Kilburn, Lincoln & Co, Fall River, Mass.
Link Belt Machinery Co, Chicago, Ill.
Rusden Machine Co., Warren, R. I.
Saginaw Manufacturing Co., Saginaw, Mich.

Presses.
Boomer & Boschet Press Co., 338 West Water St., Syracuse, N. Y.
Butterworth, H. W. & Sons Co., Philadelphia
Crawford, J. J, & Son, Nashua, N. H. (Power Screw, Hydraulic, Hollow Steam Plate.)
Curtis & Marble Machine Co, Worcester, Ms.
Fisher Ktg. Machine Co., Utica, N. Y. (For Knit Goods.)
Hart, Charles, Frankford, Philadelphia.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Phillips Co, The Thomas, Providence, R. I.
Woonsocket Machine & Press Co, Woonsocket, R. I.

Printers (Fabrics and Yarn.)
Capstick, John & Sons, Montville, N. J.
American Yarn Printing Works, Philadelphia.

Pulleys.
See Power Transmitting Machinery.

Pulley Covers.
Warren Mfg. Co., Chicago, Ill.

Pumps.
Goulds Mfg. Co, Seneca Falls, N. Y.
Rusden Machine Co., Warren, R. I.

Quills.
Parker, Henry Co, Springfield, Vt.

Reed and Harness Manufacturers.
American Supply Co, Providence, R. I.
Walder, J, Paterson, N. J.

Ribbons.
Cheney Bros, S. Manchester, Ct.

Ring Travellers.
National Ring Traveller Co., Providence, R. I.
Morley Button Mfg. Co., Boston.

Roofing Asphalt.
Warren Bros. Co., 143 Federal St., Boston.

Roofing, Gravel, Slag and Composition.
Eastern Granite Roofing Co., Jersey City N. J.

Roofing Materials (Manufacturers).
Warren Bros. Co., 143 Federal St., Boston.

Rope Transmission.
American Mfg. Co., New York.
Dodge Mfg. Co., Mishawaka, Ind.

Rove Traverse.
Rawlins, J. H, Chester, Pa.

Roving Cans.
Hill, James Mfg. Co., Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.
Laminar Fibre Co., No. Cambridge, Mass.
Walrus Fibre Mfg. Co., Medford, Mass.

Rubber Covered Rollers and Goods.
Boston Belting Co., Boston.

Saddles and Stirrups.
Dixon Lubricating Saddle Co., Bristol, R. I.

Scales.
Sweet & Doyle, Cohoes, N. Y.

Schools.
American Correspondence School of Textile, New Bedford, Mass.
Lowell Textile School, Lowell, Mass.
New Bedford Textile School.
Philadelphia Textile School, Phila, Pa.

Screens (Perforated.)
See under Perforated Metal.

Separators.
Ring Frame Thread Separator Co., The Amsterdam, N. Y.
Draper Co , The, Hopedale, Mass.

Sewing Machines and Supplies.
Arlington Machine Works (Arthur Birch), Arlington Heights, Mass.
Birch Bros., Somerville, Mass.
Curtis & Marble Machine Co, Worcester, Mass.
Excelsior Sewing Machine Co., Philadelphia.
Industrial Mfg. Co., Camden, N. J.
Manufacturers' Supplies Co., 66 No. 4th St., Philadelphia.
Nye & Tredick, 606 Arch St, Phila, Pa.
Rusden Machine Co., Warren, R. I.
Scott & Williams, 6th and Arch Sts, Phila, Pa.
Union Button Sewing Mch. Co., 164 High St., Boston.
Wilcox & Gibbs S. M. Co., New York.

Shearing Machinery.
See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.
Cohoes Foundry & Mach. Co, Cohoes, N. Y.
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Shoddies.
See Wool Shoddies.

Shuttles.
See Bobbins, Spools, Shuttles, Etc.

Silk Machinery.
Butterworth, H. W. Sons Co, Philadelphia.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H., Paterson, N. J.
Mason Machine Works, Taunton, Mass.
Rusden Machine Co., Warren, R. I.
Webendorfer & Walling, Paterson, N. J.

Singe Plates.
Butterworth, H. W. Sons Co., Philadelphia.
Taunton-New Bedford Copper Co., New Bedford, Mass.

Singeing Machines.
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers, Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Ms.
Granger Foundry & Machine Co., Providence, R. I.
Knapp, C. H , Paterson, N. J.
Rusden Machine Co., Warren, R. I.

Sizing, Starch and Gums.
Stein, Hirsch & Co, 165 Duane St, New York.

Slashers.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Lowell Machine Shop, Lowell, Mass.
Phillips The Thomas, Co., Providence, R.I.

Soaps.
India Alkali Works, Boston, Mass.

Spindles.
Bamford & Smith, Pascoag, R. I.
Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper Company, Hopedale, Mass.
Easton-Burnham Co., Pawtucket, R. I.
Whitin Machine Wks, Whitinsville, Mass.

Spindle Tubes.
Bamford & Smith, Pascoag, R. I.

Spinning Cylinders.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Spinning Frames.
See Cotton Machinery.

Spinning Frames for Wool
Woonsocket Machine and Press Co., Woonsocket, R. I.

Spinning Rings.
Draper Company, Hopedale, Mass
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.
Buckley, Benj's. Son, Gun Mill, Paterson, N. J.

Spools. *See Bobbins, Spools Shuttles, Etc.*

Sprinklers.
International Sprinkler Co., Philadelphia, Pa.

Steam Boilers.
Babcock & Wilcox Co., The, 29 Cortland St., New York City.
Brown, C. H, & Co, Fitchburg, Mass.
Pendleton. Walter & Co., New York.

Steam Boiler Compound.
Straus & Co., 55 Broad St., New York.

Steam Boiler Insurance.
Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Engines.
American Blower Co., Detroit, Mich.
Brown, C. H, & Co, Fitchburg, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Hooven (The), Owens & Rentschler Co, Hamilton, O.
Pendleton, Walter & Co., New York.
Rusden Machine Co., Warren, R. I.
Sturtevant, B. F. & Co., Boston.

Steam Surface Coverings.
Keasbey, Robert A., New York.

Steam Specialties.
Butterworth, H. W. Sons Co., Philadelphia.
Rusden Machine Co., Warren, R. I.
Jenkins Bros., New York.
Sturtevant Co., B. F., Boston.

Steam Valves.
Jenkins Bros., New York.

Tanks, Tubs and Vats.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.
Cypress Lumber Co, Apalachicola, Fla.
Lewis, H. F. & Co., New Orleans, La.
Rusden Machine Co., Warren, R. I.
Stearns, A. T, Lumber Co, Neponset, Mass.
Woolford, George, 2240 No. 9th St, Phila, Pa.

Tapes, Braids and Edgings.
Cathcart, John, & Co, 115 Franklin St, N. Y.
Fleming & Chapin, Philadelphia.
Friedberger Mfg. Co, Germantown, Pa.
Krout & Fite Mfg. Co., Allegheny Ave. and Emerald St., Philadelphia.
Schneebeli, G. A. & Co., Nazareth, Pa.
Weimar Bros, 1817 East York St, Phila, Pa.

Telephones.
Mianus Electric Co., Mianus, Conn.
Philadelphia Electric Construction Co., Philadelphia.
Plummer, F. O. 620 Atlantic Ave., Boston.

Tentering Machines.
See Dyeing, Bleaching Machinery, Etc.

Tension Pulleys.
Ameledema Oilless Bearing Co., Wayne, Junc., Phila. Pa.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Testing Machines.
Howard, Geo. C., 1783 Barker St., Phila., Pa.

Thread Protectors.
Ring Frame Thread Protector Co., The, Amsterdam, N. Y.

Tom Tom.
Frank's Wagon Works, 2731 N. 6th St., Philadelphia.

Towers.
Caldwell Co., W. E. 202 Brook St., Louisville, Ky.
Lee-Odlum Co., Memphis, Tenn.

Trimmers.
Excelsior Sewing Machine Co., Philadelphia.

Turbines.
(See Water Wheels.)

Valves—Rubber.
Boston Belting Co., Boston, Mass.

Ventilating Apparatus.
Allington & Curtis Mfg. Co., Saginaw, Mich., 81 Wareham St., Boston.
American Air Moistening Co., Boston.
American Blower Co., Detroit, Mich.
Berry, A. Hun, 23 W. 1st St, Boston, Mass.
Boston Belting Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Mattern, Geo. 44 East 8th St., New York.
National Pancoast Ventilator Co., Philadelphia, Pa.
New England Ventilating & Heating Co, Providence. R. I.
New York Blower Co., New York.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philapelphia.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sargent's, C. G., Sons, Graniteville, Mass.
Snediker & Carr, 139 No. 7th St, Phila, Pa.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Wall Whitening.
DeRonde, F. S. Co, 54 John St, New York City.
Moore, Benj. & Co, Brooklyn, N. Y.

Washers (Cloth).
Arlington Machine Works, (Arthur Birch), Arlington Heights, Mass.
Birch Brothers, Somerville, Mass.
Butterworth, H. W. & Sons Co., Philadelphia.
Hopkins, Machine Works, Bridgeton, R. I.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Phillips Co, The Thomas, Providence, R. I.
Rusden Machine Co , Warren, R. I.
Webendorfer & Walling, Paterson, N. J.

Waste.
Kay, John J, Philadelphia, Pa.

Watchman's Clocks.
Eco Magneto Clock Co, 620 Atlantic Ave, Boston.
Nanz & Co, 127 Duane St., New York.
Philadelphia Electric Construction Co., 1338 Chestnut St., Philadelphia.

Waterproof Floors.
Warren Bros. Co., 143 Federal St., Boston.

Water Wheels.
Bradway, C. P., W. Stafford, Ct.
Christiana Machine Co., Christiana, Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Leffel, James, & Co, Springfield, O.

Water Wheel Governors.
Bradway, C. P, West Stafford, Ct.
Cohoes Foundry & Machine Co, Cohoes, N. Y.
Leffel, James & Co, Springfield, Ohio.

Winders. (Back.)
Taylor, Jas., 835 Arch St., Philadelphia.

Winder Bobbins.
Sweet & Doyle, Cohoes, N. Y.

Winders. (Hosiery.)
Universal Winding Co, 95 South Street, Boston.

Wood Pulleys.
Saginaw Manufacturing Co, Saginaw, Mich.

Wool Cleaning Compound.
India Alkali Works, Boston.

Wool Combing Machinery.
Crompton & Knowles Loom Works, Worcester, Mass.
Leigh, Evan A. 35 Mason Bldg., Boston.
Stoddard, Haserick, Richards Co., Boston

Wool Extracts.
Garfield Woolen Co, Garfield, N. J.

Wool Scouring.
Philadelphia Wool Scouring & Carbonizing Co., Philadelphia, Pa.

Wool and Waste Dusters.
Atlas Foundry and Mch. Co., Newark, N. J.
Gerry, Geo, & Son, Athol, Mass.
Sargents', C. G., Sons, Graniteville, Mass.
Stillman-Randall Machine Co, Westerly, R. I.

Woolen and Worsted Machinery.
Altemus, W. W, & Co, 2816 N. 4th St, Phila, Pa.
American Tool and Machine Co., Boston.
Arlington Mch. Works (Arthur Birch), Arlington Heights, Mass.
Atlas Foundry and Mch Wks., Newark, N.J.
Birch Brothers, Somerville, Mass.
Butterworth, H. W. Sons Co., Philadelphia.
Curtis & Marble Machine Co, Worcester, Mass.
Fairmount Machine Works, 22d and Wood Sts, Philadelphia.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Howard, Geo. C., 1783 Barker St., Phila., Pa.
Hunt, Rodney, Machine Co, Orange, Mass.
Hunter, Jas, Machine Co, No. Adams, Mass.
Jefferson, Ed, & Bro, 28 Strawberry St, Phila, Pa.
Kenyon D. R. & Son, Raritan, N. J.
Leigh, Evan A. 35 Mason Bldg, Boston.
Parks & Woolson Machine Co., Springfield, Vt.
Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Philadelphia Textile Machinery Co., Hancock and Somerset Sts., Philadelphia.
Phillips Co. The Thomas, Providence, R. I.
Rusden Machine Co., Warren, R. I.
Sargent's, C. G., Sons, Graniteville, Mass.
Schofield, Geo. L., Philadelphia.
Stoddard, Haserick, Richards & Co, Boston, Mass.
Woonsocket Machine & Press Co Woonsocket, R. I.

Wool Shoddies.
Garfield Woolen Co, Garfield, N. J.
Slack, Wm. H. B., & Bro, Springfield, Vt.

Wool Washing, Preparing and Drying Machinery.
Hunter, Jas. Machine Co., No. Adams, Mass.

NEW ENGLAND
COTTON YARN COMPANY,

BRANCHES: BENNETT, HOWLAND, ROTCH, N. B. SPINNING, COHANNET, NEMASKET, GLOBE, SANFORD.

650,000 SPINDLES.

Cotton Yarns FOR WARP and HOSIERY TRADES, Carded and Combed, single and twisted, from American Peelers, Sea Island, Peruvian and Egyptian Cotton.

Colored Yarns Solids, Mixes and Randoms.

Bleached Yarns All numbers single and plies.

Fine Yarns For Electrical Trade

ALL NUMBERS **4 to 140**

Main Office, 37 North Water Street, NEW BEDFORD, MASS.

Philadelphia Drying Machinery Co., 6721 Germantown Ave., Philadelphia.
Phillips Co, The Thomas, Providence, R. I.
Sargent's, C. G, Sons, Graniteville, Mass.

Yarns, Threads, Etc.

Banding.

Moore, C. & Co. 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Westfield, Mass.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Cotton Yarns.

American Cotton Yarn Exchange, 67 Chauncy St., Boston.
Catlin & Co. New York and Boston.
Colchester Mills, 346 Broadway, New Yor
Dexter Yarn Co., Pawtucket, R. I.
Eddy & Street, Providence, R. I.
Spring St., N. Y.
Eichmann & Sternberg, New York.
Germantown Spinning Co, Germantown Pa.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket. R. I.
Indian Orchard Co., Indian Orchard, Mass.
Jenckes, E., Mfg. Co., Pawtucket, R. I.
Mitchell, Jas. E, & Co, Boston and Phila, Pa.
Montgomery, J. R, Co, Windsor Locks, Ct.
Monument Mills, Housatonic, Mass.
New England Cotton Yarn Co , New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Tucker & Cook Mfg. Co, Conway, Mass.
Whittier Cotton Mills, Lowell, Mass.

Flax, Hemp, Jute and Ramie.

Fawcett, Hughes, 115 Franklin St., N. Y

Gassed Yarns.

Eichmann & Sternberg, New York.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
New England Cotton Yarn Co , New Bedford, Mass.

Glazed Yarns.

Indian Orchard Co., Indian Orchard, Mass.
Lorimers, Wm. H. & Sons Co., Philadelphia.
Malcolm Mills Co, Frankford, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Harness Twines.

Cranston Worsted Mills, Bristol, R. I.
Fawcett, Hughes, 115 Franklin St., N. Y.
Moore, C., & Co., (S. W. cor. 5th and Market Sts.)
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.

Boyer, B. F, & Co, Camden, N. J.
Campbell, Geo, & Co, Phila, Pa.
Colchester Mills, 346 Broadway, New York.
Cranston Worsted Mills, Bristol, R. I.
Dexter Yarn Co., Pawtucket, R. I.
Germantown Spinning Co, Germantown, Pa.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E., Manufacturing Co, Pawtucket, R. I.
Mitchell, James E, & Co, Phila. and Boston
Monument Mills, Housatonic, Mass.
New England Cotton Yarn Co., New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Platt Bros, Manayunk, Pa
Skerry, A T, & Co, 47 Leonard St, N. Y.
Walcott & Campbell Spinning Co, New York Mills, Oneida Co, N. Y.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass
Wolstenholme & Clark, Baker and Mallory Sts., Manayunk, Pa.

Mercerized Yarns.

Indian Orchard Co., Indian Orchard, Mass.
Lorimer, Wm. H. & Sons Co , Philadelphia.
Montgomery, J. R. & Co., Windsor Locks, Conn.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Waverly Worsted Co, Main St. and Green Lane Manayunk. Pa.
Wolstenholme & Clark, Baker and Mallory Sts., Manayunk, Pa.

Mohair Yarns.

Cranston Worsted Mills, Bristol, R. I.
Goff, D. & Sons, Pawtucket, R. I
Skerry, A. T, & Co., 47 Leonard St., N.Y.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I
Indian Orchard Co., Indian Orchard, Mass.
Malcolm Mills Co, 229 Chestnut St, Phila, Pa.
Montgomery & Co, J. R, Windsor Locks, Ct.
Skerry, A. T, & Co, 47 Leonard St, N. Y.

Silk Yarns.

Cheney Bros, S. Manchester and Hartford Ct.
Eddy & Street, Providence, R. I.
Ryle, Wm, & Co, 54 Howard St, N. Y.

Woolen and Merino Yarns.

Boyer, B. F, & Co, Camden, N. J.
Eddy & Street, Providence, R. I.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Jenckes, E. Mfg. Co., Pawtucket, R. I.
Platt Bros, Manayunk, Pa.
Skerry, A. T, & Co, 47 Leonard St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.

Worsted Yarns.

Alleghany Worsted Mills, Phila, Pa.
Boyer, B. F, & Co, Camden, N. J.
Campbell, Geo. & Co, Phila, Pa
Campion, Richard, 17 Bank St., Philadelphia.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, & Sons, cor. Broadway and Jefferson Ave., Camden, N. J.
Goff, D. & Sons, Pawtucket, R. I.
Herbst & Jones, 21st and Naudain Sts, Philadelphia, Pa.
Pocasset Worsted Co., Thornton, R. I.
Skerry, A. T, & Co, 47 Leonard St, N. Y.

Alphabetical Index to Advertisements.

	page.
Alexander Bros.,	583
Allegheny Worsted Mills,	706
Allen Iron Works	582
Allington & Curtis . Outside Back Cover	
Altemus, W. W. & Son,	574
Ameledema Oilless Bearing Co,	748
American Aniline Co.,	717
American Appraisal Co.,	691
American Blower Co ,	751
American Bridge Co.,	731
American Correspondence School of Textiles,	744
American Cotton Yarn Exchange,	704
American Knitting Machine Co.,	730
American Mfg. Co.,	588
American Moistening Co.	702
American Napping Machine Co.,	728
American Perforated Metal Co.	729
American Snuff Co ,	691
American Supply Co.,	574
American Tool and Machine Company	726
American Yarn Printing Works	740
Anchor Color Mfg. Co,	717
Antisdel E. M.,	739
Ardrey, S. B, & Sons,	740
Arlington Mach. Works (Arthur Birch),	719
Ashworth, Elijah,	575
Atlas Foundry Mch. Co.,	708
Atteaux, F. E. & Co.	712
Babcock & Wilcox Co., The,	746
Bailey, Frank	727
Bamford & Smith,	728
Bates Machine Co.,	576
Beattie, Wm. & Son	739
Beckley, A. J. & Co.	729
Berlin Aniline Works,	715
Berry, A. Hun,	718
Birch Bros.	572-719
Bischoff, C., & Co.,	715
Boomer & Boschert Press Co.	698
Booth, Benj. Co.	575
Bosson & Lane,	716
Boston Belting Co.,	747
Boston Blower Co.,	751
Boyer, B. F, & Co,	705
Bradway, C. P,	—
Branson Machine Co,	730
Breedon Sons, Wm.,	741
Bristol Co., The . Outside Back Cover.	
Brophy's, T, Sons	708
Brown, C. H, & Co.	746
Brown, S.	583
Brown, W. H,	576
Buck Card Clothing Co.	575
Buckley's Benj., Son,	726
Buffalo Forge Co.	680
Burt Mfg. Co.	692
Butterworth H. W. & Sons Co.,	561
Caldwell, W. E. Co.	720
Calmore & Co.	738
Campbell, Geo, & Co,	706
Campbell & Clute,	740
Campion, Richard,	705
Capstick, John & Son	710
Cathcart, John & Co.	739
Catlin & Co,	701

	page
Cheney Bros,	708
Christiana Machine Co.	745
Cling Surface Co.	680
Coggeshall Mfg. Co,,	746
Cohoes Foundry & Machine Co.,	—
Colchester Mills,	703
Cooper, Chas,	740
Corey, S. J.,	717
Corey, Wm., Co.,	741
Crabb, Wm, & Co,	726
Crandall, G. H.,	580
Crane Mfg. Co.,	740
Cranston Worsted Mills,	706
Crawford, J. J. & Son.,	—
Croft, Howland, Sons & Co,	706
Crompton & Knowles Loom Works, Outside Back Cover.	
Crosby & Gregory,	587
Curtis & Marble Machine Co.,	728
Cypress Lumber Co,	720
Davidson & Brooke	705
Delaware Dyeing Mch. Co.	721
Denny, R. B.	690
DeRonde, Frank S. Co.	691
Dexter Yarn Co.,	703
Dillon & Co,	717
Dixon, Jos., Crucible Co.,	748
Dixon Lubricating Saddle Co.	574
Draper Company	563
Dodge Manufacturing Co.	573
Dodge Needle Co.	736
Duncan & Baillie,	709
Eastern Granite Roofing Co.	583
Easton-Burnham Co.,	698
Eastern Machinery Co.	747
Eclipse Machine Co.,	740
Eco Magneto Clock Co,	749
Eddy & Street,	701
Eichmann & Sternberg,	703
Elliot & Hall,	576
Excelsior Knitting Machine Mfg. Co,	736
Excelsior Sewing Machine Co.,	739
Fairmount Machine Co,	570
Farbenfabriken of Elberfeld Company,	711
Fawcett, Hughes,	701
Felton, S. A. & Son Co.,	574
Ferguson, John W., Outside Back Cover	
Fabric Measuring and Packaging Co.	579
Firth & Foster Co	709
Fisher Knitting Machine Co.,	737
Fleming & Chapin	743
Foster, E. H. & Co.	741
Frank's Wagon Works	717
Friedberger Mfg. Co.	578
Furbush, M. A. & Son Machine Co.	588
Geisenheimer & Co, Outside Back Cover.	
Germantown Spinning Co.,	700
Gerry, Geo. & Son,	737
Goff, D. & Sons	698
Goulds Mfg. Co.	749
Granger Foundry & Machine Co., Inside Front Cover.	
Grant Yarn Co.,	701
Greene & Daniels Mfg. Co.,	704
Greenwood, R., & Bault,	704
Haedrich E. M.	727

page

Harrington & King Perforating Co. Outside Back Cover.
Hardy Machine Co., ... 718
Hart, Chas. . . . . —
Hartford Steam Boiler Inspection & Insurance Co., ... 749
Hepner & Horwitz, ... 739
Hepworth, John W, & Co, ... 739
Herbst & Jones, ... 706
Hill, James Mfg Co., ... 571
Hirschman, H. 704
Home Bleach & Dye Works, ... 709
Hopkins Mch. Works, ... 723
Hooven, Owens & Rentschler Co, ... 727
Howard, Geo. C., ... 571-726
Howard & Bullough Am. Machine Co.. . . 565
Hudson Fibre Co. 582
Humphrey, S. K. 576
Hunter, Jas, Machine Co, ... 722
Hunt, Rodney, Machine Co, ... 725
Hyde, Edward S., ... 703
Illinois Central Railroad, ... 691
India Alkali Works, ... 729
Indian Orchard Co. 702
Industrial Manufacturing Co., ... 742
International Sprinkler Co., ... 745
Ives, Loyal T. 741
Janney, O. S., & Co., ... 714
Jefferson, Edw, & Bro., ... 692
Jeffrey Mfg. Co. 749
Jenckes, E., Mfg. Co., ... 733-701
Jenkins Bros., ... Outside Back Cover.
Johnson, Chas. A., & Co., ... 729
Johnson, Wm. G, & Co. 716
Jones, J. Howell 710
Jones, Lewis 743
Kavanaugh, Geo. W. 743
Kay, John J. 707
Keasbey, Robert A. Outside Back Cover.
Keller, John J., & Co., ... 713
Kennedy, Thos 740
Kenyon, D. R. & Son, ... 724
Kilburn, Lincoln & Co., ... 571
Klipstein, A, & Co., Outside Back Cover - 716
Knapp, C. H. 750
Koechl, Victor, & Co, ... 710
Krout & Fite Mfg. Co., ... 743
Kuttroff, Pickhardt & Co. 586
Laminar Fibre Co., ... 571
Lea Electric Mfg. Co., ... 749
Leffel, James, & Co, ... 745
Leigh, Evan Arthur, ... 574
Leighton Mch. Co., ... —
Leland Belting Co. 581
Lever, Oswald 579
Lewis, H. F. & Co., Ltd., ... 726
Lincoln, The, Co. 719
Lindley, Geo. W. 738
Link Belt Machinery Co., ... 577
Littlewood, G. J, & Sons 712
Loom Picker Co., ... 581
Lorimer's, Wm. H. Sons Co., ... 709
Lowell Machine Shop, ... 562
Lowell Textile School, ... 744
Lydall, H., & Foulds, ... 741
Malcolm Mills Co., ... 706
Manufacturers' Supplies Co. 741
Mason Machine Wks., ... 567
Matheson, & Co., Wm. J., ... 711
Mattern, Geo 718
Mayo Knitting Machine & Needle Co, ... 737
McKerrow, H. G. 568
McMichael & Wildman Mfg. Co, ... 732
Merrimac Chemical Co, ... 692
Merrow Machine Co., ... 742
Mianus Elec. Co 580
Mitchell Jas. E., & Co., ... 701
Molt Bros. 712
Montgomery, J. R., Co., ... 704
Monument Mills.. 704
Moore, Benjamin & Co.. 749
Moore, C., & Co., ... 703
Morley Button Mfg. Co., ... 572
Mueller, A. 741
Murray, C. O. 583 692
Nanz & Co, ... 571
National Mercantile Agency 748
National Pancoast Ventilator Co. 729
National Ring Traveler Co., The 572
New Bedford Textile School 744
New England Butt Co., ... 743
New England Cotton Yarn Co , ... 688
New England Ventilating & Heating Co., 718
New York Blower Co., ... 730
N. Y. & Boston Dyewood Co, ... 716
Nye & Tredick. 732

page

Oakes Mfg. Co, ... 712
Orswell Mills, ... 702
Page Needle Co., ... 741
Parker, Henry Co. 575
Parks & Woolson Mch Co. 729
Parry, A. N. & Co., ... 692
Pawtucket Dyeing & Bleaching Co 709
Paxton & O'Neill, ... 738
Pearson, J. T., ... 738
Peel, Sam'l H. 743
Pendleton, Walter & Co., ... 747
Pepper Mfg. Co., ... 736
Phenix Iron Foundry, ... 7 9
Philadelphia Drying Machinery Co. 570
Philadelphia Electric Construction Co. 748
Philadelphia Linen Finishing Co. 710
Philadelphia Textile Machinery Co., 569-718
Philadelphia Textile School, ... 744
Philadelphia Wool Scouring and Carbonizing Co. 707
Phillips, The Thomas, Co, ... 752
Platt Bros 705
Plummer, F. O , ... 580
Pocasset Worsted Co., ... 698
Popham, Henry & Son 749
Quilter, James H, ... 741
Rawlins, J. H., ... 575
Richards, M. V., ... 697
Riggs & Co , ... 692
Ring Frame Thread Protector Co.. . . . 580
Rittenhouse, Frank 735
Roy, B. S 583
Roessler & Hasslacher Chemical Co, ... 715
Rowland, Sam'l 709
Rusden Mch. Co., ... 584
Kyle, William, & Co., ... 708
Saginaw Mfg. Co. 726
Sargent's, C. G., Sons, ... 579
Schofield, Geo. L. 727
Schoellkopf, Hartford & Hanna Co., ... 713
Schneebeli, G. A. & Co 734
Scott & Williams 735
Sharpless Dyewood Extract Co.. 712
Siggers, E. G. 587
Skerry, A. T, & Co, ... 707
Slack, Wm. H. H. & Bro. 727
Snediker & Carr 719
Snyder, Homer P. Mfg. Co. 738
Solis, Andrew J. Jr., & Co., ... 702
Stafford & Holt, ... 735
Stamford Mfg. Co., ... 714
Stearns, A. T, Lumber Co, ... 720
Stein, Hirsch & Co., ... 726
Stephenson Mfg. Co.. 752
Stillman-Randall Machine Co., ... 720
Stoddard, Haserick, Richards & Co, ... 570
Straus & Co. 746
Sturtevant, B. F. Co., . Inside Back Cover
Sweet & Doyle 696
Sykes & Street, ... 714
Taunton-New Bedford Copper Co., ... 717
Taylor, Jas. 735
Teobets, E. L. & Co., ... 575
Thayer, Edward M. 712
Thun & Janssen 740
Thurston, A. G. & Son, ... —
Torrance Mfg. Co , ... 728
Townsend, Thomas 576
Treat, Orion, ... 741
Triumph Machine Mfg. Co., ... 727
Tucker & Cook Mfg. Co., ... 701
Union Button Sewing Mch. Co., ... 742
Universal Winding Co., ... 700
Walcott & Campbell Spinning Co, ... 701
Walder, J., ... 576
Walrus Fibre Mfg Co., ... 571
Ward & Vandegreft 576
Wardwell Needle Co., ... 741
Warren Bros. Co. 575
Warren Company, The 682
Warren Mfg, Co., ... 682
Warren, W., Thread Works, ... 700
Watson, L. S, Mfg. Co, ... 574
Waverly Worsted Co. 705
Webendorfer & Walling 721
Weimar Bros, ... 743
Whitcomb, H. C, & Co, ... 576
Whitin Machine Works, ... 564
Whitinsville Spinning Ring Co., ... 572
Whiton D. E. Machine Co., ... 748
Whittier Cotton Mills, ... 702
Willcox & Gibbs Sewing Machine Co . . . . . —
Wolstenholme & Clark, ... 707
Woolford, George, ... 720
Woonsocket Machine & Press Co. 566

MILLS FOR SALE! Woolen Mills and other manufacturing plants Agent for Sale of Mill Properties.
R. B. DENNY, 143 Federal St., BOSTON, MASS.

$1,000
or
$1,000,000

It makes no difference how large or small a property is, we guarantee an exact appraisal.

What is your plant worth in detail at present market prices?

How much would it cost to replace it completely?

Can you tell accurately how much insurance you can legally carry on it?

Can you tell how much insurance you could collect in case of a complete loss?

These questions are vitally important to all owners, stockholders or investors. The American Appraisal Co. can answer them.

We furnish complete and accurate invoices, inventories, and plans of manufacturing plants, mills and all properties guaranteeing absolute proof of loss in case of fire and correct data for carrying insurance. Invaluable in securing loans or settling estates. We will call upon you or write you. Send for our book of particulars.

THE AMERICAN APPRAISAL CO.
OF MILWAUKEE, WISCONSIN.
Capital Stock $100,000
Eastern Department
804 Park Row Bldg., . New York
Telephone 3744 Cortlandt.

OF INTEREST TO
Manufacturers

Write for a copy of pamphlet just issued by the

ILLINOIS CENTRAL R. R. COMPANY

giving reliable information concerning nearly 200 desirable locations for industries, and entitled

INDUSTRIAL SITES IN TEN STATES

Address GEORGE C. POWER,
Industrial Commissioner Illinois Central Railroad,
Room 506 Central Station, CHICAGO, ILL.

The Standard

THE Best Mill and Factory Paint made.
Gives a Hard, Smooth Surface.
A Pure, Lustrous White that is Fire and Weatherproof.
Comes in dry powder form, mixed with cold water, when it is all ready for use.
White and 24 Handsome Shades.
Send for color cards & samples.
Frank S. DeRonde Co.,
52-54 John St., N. Y.

LYTHITE

ons Seeking Homes.

Persons seeking homes or investments, or firms and corporations seeking locations in the South and who desire information about Tennessee would do well to address Robert Gates, special industrial and immigration agent, Louisville & Nashville R. R. for Tennessee, at Nashville, Tenn.

HOSIERY FINISHER WANTED.

A Western hosiery mill desires to employ a young man to take charge of the finishing department. Address, D. M., 105, care of Textile World, Boston.

COTTON MILL MAN WANTED.

A man of marked ability, who has had general experience in a Southern cotton mill to act in the capacity of adviser in selecting location, plans and equipment for proposed sheeting and drilling mill; to be present during construction of building nd installation of machinery; to start mill and manage same, barring office and financial departments. Must be strictly sober, industrious, of high moral standing and not too quick to change places. State full particulars in application. E. E. CLEAVELAND, Waukegan, Ill., Lock Box 76.

FOR SALE.

A PROPERTY SUITABLE FOR FACTORY OR MILL PURPOSES,

located at Changewater, N. J., two miles from Washington, N. J., on the line of the D. L. & W. R. R. The property includes 48 acres of land, a 5 1-2 story stone mill or factory 60 x 45 feet, and a 3 story frame mill or factory 44 x 26 feet, with ample and reliable water power. Also ten houses suited for residential purposes, Also store houses, barns, etc. Price on application. Address,

AMERICAN SNUFF CO.,
111 FIFTH AVE., - NEW YORK.

The Carnegie Steel Co. is one of the big manufacturing concerns which have sent duplicate orders this month for

Cross Oil Filters.

Others as prominent are ordering from all over the civilized world.

Only merit counts with these purchasers.

We guarantee the Cross to save half your oil bills, and send them on approval at our expense. Catalogue 15.

THE BURT MFG. CO.,

Akron, Ohio, U. S. A.

Largest Mfrs. of Oil Filters in the World.

We also make the Burt Exhaust Head.

DISCARDED and DAMAGED PRODUCTS.

A. N. PARRY & CO,

Amesbury, Mass.

Buyers of discarded products for cash from Print Works and Damaged Cotton Cloth. Send samples and prices of anything you have to sell.

—Established 1872.—

RICGS & COMPANY,

F. D. STERNER, General Manager,

575-577 The Bourse, Phila. Pa.

Purchase and Sell

All kinds legitimate business; Negotiate Partnerships, Procure Special Capital. Sell Stocks and Bonds of first-class Manufactu ing and Mineral Co-operations.

We make a Specialty of the Selling of Manufacturing Plants of every description.

CARBONIZER removes burrs perfectly and leaves **Wool** white and soft

Also Bi-Sulphite of Soda, Alum and Acid.

Manufactured by the

MERRIMAC CHEMICAL CO.,

13 Pearl Street, Boston.

Works at So. Wilmington, Mass., B. & M. RR, Southern Division.

EDWARD JEFFERSON & BRO.,

Worsted .·. Machinery,

28 Strawberry Street,

PHILADELPHIA, - - PA.

SOLE AGENTS FOR

J. B. Farrar & Sons, Halifax, England,

Briggella Cork Rollers for Spinning and Drawing.

Not connected with any "Trust" or "Combination."

MAIL SAMPLES FOR QUOTATIONS.

Secure our prices on bobbins with metal shields of all kinds.

CHARLES O. MURRAY,

.....NASHUA, N. H.

Manufacturer of **Spools, Bobbins' Skewers, Shuttles,** and Wood Turnings of everydes cription.

SITUATIONS WANTED.

The advertisers in the following columns should be addressed in care of TEXTILE WORLD or inquiries concerning them may be addressed directly to "Information Department TEXTILE WORLD," as full particulars of each advertiser are on file, and the addresses of suitable agents, superintendents and foremen for every branch of the textile industry will be furnished to manufacturers.

Any subscriber may file his application, and no charge is made until position is secured.

The business of this department is held strictly confidential.

The applications of good overseers in every department, who are in want of positions are solicited.

Manufacturers are invited to use this department when in need of skilled men; each case will be handled confidentially, with promptness and judgment, and without charge to manufacturers.

A member of the firm is in charge of this department, and gives personal attention to each case.

WOOLEN SUPERINTENDENTS.

1682 **Supt. & Designer,** or would take a position as designer and asst. supt. in a good mill at $1500 per year. Has had 14 years' experience in woolen and worsted mills from pattern weaver, loom fixer, boss weaver, designer. Men's wear, wool and worsteds and dress goods. Best of references.

880 **Supt. or Assistant Supt. and Designer.** Over 25 years' experience as supt. and designer. Has designed and manufactured nearly all classes of goods made in a woolen mill, in wool and worsted, such as shawls, blankets, beavers, kerseys, cheviots, fancy cassimeres, overcoatings, worsted suitings, etc. 53 years old; married, with family. Would go West or nearly anywhere. Wants a mill where he can permanently settle and give them the benefit of his experience as a manufacturer. A first-class man.

1683 **Woolen Supt.** Large experience. Last mill where he was employed was for five years overseer and 15 as superintendent. A good man on flannels, sackings, skirtings, woolen dress goods and domestic woolen goods. Well up in weaving, dyeing, carding, etc., and has a general knowledge of all departments in a Western woolen mill. Englishman; married. Refers to past employers.

1674 **Supt.** or assistant in woolen mill. 10 years' experience on cassimeres, cloakings, etc. Well posted on shoddies. First-class references. Strictly temperate. Age 29; American; single.

1594 **Supt. of 5 to 10 Worsted** Combing Mill, or asst. supt. in a larger mill, or good position as drawer or drawer and spinner. Wants $3.50. Has worked on fine, medium and coarse wools, numbers principally from 14 to 50 in the gray and fancy mixes. Had seven years' experience in England and 10 years' experience in a mill in this country. Can take place at once.

1786 **Woolen or Worsted Supt.** Age 41; American; married. Has worked on cassimeres, cheviots, worsteds for men's wear, dress goods, flannels, overcoatings, meltons, kerseys, cotton worsteds. All kinds of machinery. Can take position at once.

1768 **Supt. and Designer** in a worsted or woolen mill. Prefers worsted mill. Now employed as designer and assistant supt., but is competent to take charge of a mill. Is familiar with all makes of machinery, and has manufactured nearly all classes of goods. Will not change for less than $2,000 a year. Excellent references.

COTTON SUPERINTENDENTS.

1686 **Cotton Supt.** Age 53; American; married. Large experience. Been in present position as superintendent for a number of years and previously in the same mill as overseer of weaving. Nearly all kinds of goods. Is familiar with nearly all makes of machinery. Refers to past employers.

1496 **Superintendent or Boss Weaver.** Age 45; single. Large experience on all classes of cotton goods and all makes of American machinery. At present employed, but wishes to obtain a better position. Now in charge of 1800 looms. Is willing to go South.

1608 **Supt. of Yarn Mill.** A young man, 30, married, and competent to fill a good position with credit. Honest, temperate and excellent business training and judgment. Thorough manager and salesman, and keenly alive to conditions of today.

1689 **Supt. or Assistant Supt.** Age 37; American; married. Large experience as overseer and first-class references. At present employed as overseer, but is capable of filling a superintendent's position. Worked on prints, twills, sheetings, cambric and fancies.

1673 **Cotton Supt., Carder, and Spinner.** Age 25; English; single. Large experience in English mills. Can take position at once. Has worked on all kinds of cotton machinery.

1754 **Wanted,** position as superintendent in cotton mill. Thoroughly understands coarse and fine yarns, combed and carded, and all classes of white goods.

189 **Cotton Superintendent** wants position in Northern mill. Has been in charge of Southern mills for 7 years. Previous experience in N. E. Is well known among mill men, and can furnish the best of references. Age 35; married.

1772 **Supt. or Overseer of Weaving.** Age 38; American; married. Lawns, fine sheetings and shirtings, sateens, twills, fancies, denims and cottonades. Is familiar with Whitin, Lowell, Draper, Northrop and English machinery. Not at present employed.

WOOLEN CARDERS.

1696 **Carder**, or secondhand. Experienced on cassimeres, cloakings, blankets, shawls, jeans, and is familiar with Furbush, Bridesburg and Smith cards. Wants position in Western or Southern States. Can take place immediately. Age 30; American; single.

1701 **Boss Carder.** Age 39; English; married. Has had large experience as boss carder in Canadian mills, and has worked in New England mills, also held positions in England before coming to this country. He has worked on all kinds of wool, cotton, waste, mungo and shoddy mixes, cassimeres, dress goods, knit goods and blankets. Can take position at once. Excellent references.

1707 **Overseer of Carding.** Worked for 21 years in a woolen mill as boss carder, but through sickness was obliged to resign his position. Is now ready and wants a situation at once. Age 49; American; married. Wants $3 a day. Has worked on dress goods and flannels.

1643 **Woolen Carder.** Age 45; American; married. Has worked as overseer in first-class N. E. mills for the past 18 years. He is at present employed, but wishes to better himself. Could leave on a week's notice. Has worked on cassimeres, dress goods, flannels and underwear. A good manager of help and thoroughly competent and eliable.

COTTON CARDERS.

1593 **Overseer Cotton Carding and Combing.** Now in charge of this department in a large N. E. mill. Has had first-class experience and is well recommended. Age 38; married, American. All grades of cotton.

1736 **Overseer Cotton Card Room** and Combing. Age 39; married. Has been overseer for past nine years. In last position seven years. Started up two large rooms with combers in each. Thoroughly understands all machinery in card room, and has run all grades of cotton. Can furnish references, if required.

1759 **Boss Cotton Carder.** 25 years old. Has had 12 years' experience in a cotton carding room, and is well advanced in drafting and changing. Speaks French, Italian and English. Willing to go South or West. Refers to past employers.

1718 **Second-Hand in Cotton Card** Room. Has had 10 years' experience in N. E. mill. Understands all makes of machines. Can make all changes from 1 to 20 hank. Has taken course in cotton spinning at American Correspondence School of Textiles, New Bedford. First-class references. Would start at $2 00 a day. Young man and strictly temperate.

1720 **First Class Cotton Carder or** Supt. Has had the advantage of a great deal of experience in the various departments, and is thoroughly posted on all details of manufacturing and machinery. Would accept a position North or South. 36 years of age; American; married. Worked on print cloths, twills and sheetings. Has had charge of bleaching.

1782 **Overseer Cotton Carding.** Age 25; single. Fine carded and combed cotton yarns. Is familiar with all makes of machinery. Wants $3.50 per day.

WOOLEN SPINNERS.

1709 **Worsted Spinner or Section** Hand. Age 22 and unmarried. At present employed, but not satisfied with surroundings. Would accept moderate pay.

1784 **Worsted Drawer and Spinner.** Would take twisting. Age 2?; English; single. Can furnish references as to ability and character.

633 **Woolen Mule Spinner** desires to move from Maine on account of wife's health. At present in good position. Age 37; married, Scotchman.

1691 **Boss Spinner.** Large experience in first-class N. E. mills on flannels and all kinds of fancy cassimeres. Englishman; age 50; married. Refers to past employers.

1543 **Woolen Spinner and Carder.** Has handled both departments together and separately. Will go South or West. Age 29; single.

1601 **Woolen Spinner,** or painter and glazer in any kind of mill. Age 31; Irish; married. Wants $10 50 per week. Has worked on cheviots, overcoatings, broadcloths, satinets, hosiery, yarns, etc.

1519 **Overseer of Woolen Spinning.** Age 31; married. Has worked on yarns from 1 run down to 5¼. Some experience on shoddy. Will work for moderate salary.

COTTON SPINNERS.

1636 **Overseer Cotton Spinning, Spooling, Warping, Etc.** Has held position seven years of second-hand and has taken textile school courses. Having had unusual opportunities to learn, he feels competent to take position as overseer. Highly recommended by present employers.

1655 **Overseer of Cotton Spinning.** 42 years old; married. Experience as a spinner covers a period of 30 years in first-class N. E. mills. Has worked principally on fine yarns, 30's to 200's. Had some experience on coarse numbers. First-class references.

1364 **Mules or Frames.** 34 years old; married. Thoroughly understands all makes of English and Mason mules. Has set up machinery and been expert fixer. Wants good position as overseer of mule room, or would take charge of frames. Accept $3.50 per day. Best references.

1663 **Overseer Mule Room.** Eleven years' experience in Fall River mills, and for the past ten years overseer of mule room. Excellent reference from present employer. Age 44, married.

1698 **Overseer of Mules.** 34 years old; married; English. 10 years' experience, chiefly on English mules, on all grades of cotton yarn. Would like to get a large job.

1703 **Overseer Ring Spinning, Warping and Spooling.** Is experienced on white work from Nos. 4's to 30's. Is familiar with Whitin and Lowell Machine Shop spinning frames and spoolers and warpers. Wants $3 per day to start with. Age 39; American; married.

1690 **Cotton Mule Spinner.** Age 42; French; married. Has worked on prints and sheetings and on yarns from 9's to 50's. First class references. Two years' experience as secondhand and five as overseer. Wants $2.50 per day to start with.

WOOLEN WEAVERS.

1645 **Overseer Weaving.** Age 30; married, American. Has worked in weave room since he was 17 years old, as weaver, fixer and secondhand of weaving, except for a short time was traveling salesman. Has worked on ladies' dress goods, men's fine worsted suitings, overcoatings, cloakings, etc., on Crompton & Knowles and Jacquard looms. Excellent references.

1712 **Second-Hand or Overseer of** Weaving. Age 29; American; single. Has some knowledge of designing. Has worked on fancy worsteds, cassimeres and cheviots. Wants $3.50 per day to start with. Is familiar with Crompton & Knowles machines.

1688 **Overseer of weaving** in large mill, designer in small mill, or assistant designer in a large mill. Age 38; German; single. Has worked on beavers, chinchillas, fine cassimeres, fine fancy worsteds, ladies' dress goods, army goods, union cassimeres and other classes of goods. Strictly temperate and industrious.

1482 **Weaver or Wool Sorter.** Has worked on cassimeres, cheviots, tricots, kerseys and cloakings. Good references.

1536 **Boss Weaver or Superintendent.** Age 43; married; American. Can run any department in woolen mill, having been in business for himself. Not at present employed. Can take position immediately.

1468 **First-Class Weaver** on fancy woolens, worsteds and meltons, cotton worsteds and shoddy goods. Can take overseer position after 6 days' notice. Has been loom fixer, boss and superintendent. Age 43. Crompton & Knowles looms.

COTTON WEAVERS.

1681 **Overseer or Secondhand of Cotton Weaving.** Has had long experience as loom fixer, secondhand and overseer, and can furnish excellent references. Has also had charge of cloth hall and drawing departments. With one mill was 15 years.

1783 **Secondhand or Overseer** of cotton weaving, or assistant designer. Age 25; American; single. Just completing two year course in both designing and weaving. Is a practical loom fixer of three years' experience.

1731 Young man 32 wants position in charge of weave room. Been twenty years in cotton mill, and has had experience on many kinds of looms, including Draper. Can do own dyeing and figuring. Is accustomed to fancies, and can furnish best of references. Is open to go anywhere, but prefers Japan.

1708 **Overseer of Weaving.** Has had 15 years' experience on 12 different kinds of looms and most all kinds of cotton goods. Has worked in some of the largest mills in the South.

1738 **Overseer of Weaving, Drawing-in,** Warping, Slashing and all preparations. 14 years' experience in colored mill in Manchester, Eng., and two years in this country. Age 37; English; married. Has worked on sateens, drills, dress goods, zephyrs, turkish towels, and can pick out own pattern for weaving and drawing-in. Understands the different makes of looms. Wants $3.00 per day.

1459 **Fancy Cotton Weaving,** Slashing, etc. Age 36; married. Has worked on all kinds of fancy goods and is thoroughly competent in all departments of manufacturing, with the exception of spinning. Understands velvet and corduroy weaving. Is not at present employed and can take a position immediately.

KNITTERS.

1755 **Boss Knitter or Fixer.** Has worked on eiderdowns, astrachans, cardigan jackets, balbriggans, rubber linings and fancy knit goods. Will not change for less than $3 a day.

598 **Boss Knitter or Supt.** Age 48; married. Is thoroughly familiar with the manufacture of all classes of seamless hosiery, and can take any position at short notice.

1722 **Supt. of Knitting.** Age 37; American; married. Long experience as overseer fits him for superintendent's position. Has also worked three years in machine shop, setting up knitting machines and making the different parts of same. Has worked on cotton, wool, merino and silk; plain and ribbed hosiery and underwear. First-class recommendations.

1780 **Boss Knitter** on flat or fleece-lined underwear and fancy overshirts. Age 33; Canadian. Is familiar with all makes of circular spring needle machines, also all rib machines in spring or latch needle, also understands sewing machines, loopers, etc. At references

1777 **Overseer of Knitting.** Has worked on ladies' and infants' underwear. Standard makes of machines. Wants $21 per week. Age 33; English. Refers to past employers.

1776 **Boss Knitter.** Had constant experience in the knitting business for the past twenty years. Can handle any kind of goods made on a circular spring needle knitting machine. Age 36; American; married. Excellent references.

DESIGNERS.

1635 **Designer** on colored cotton dress goods, and shirtings, and fancy worsted dress goods, piece dye, jacquard work in cotton, silk filling, also lappets. Would not consider position paying less than $1200 a year. Is at present employed in one of the leading mills, making fancy cotton, and is an especially bright young man. Early training in Scotland. Has been in this country about four years

1773 **Asst. Designer.** Age 22; English; single. Fancy worsted, cotton and silk mixed dress goods; serges, shoetops and some double cloths.

1672 **Designer, Overseer of Weaving,** or assistant supt. Age 26; English; single. Has worked in various mills in England and this country. Holds first honors diploma for weaving and designing (London City Guilds). Fancy worsteds, dress goods, colored and fancy cotton goods.

1599 **Assistant Designer.** A young man who is studying woolen and worsted designing would like an opportunity to get practical experience, and will accept very small wages. Has worked in mill for two years as weaver on Crompton & Knowles looms. Excellent references as to character.

1721 **Asst. Supt. or Designer.** Age 27; American; single. Has worked on all classes of colored cotton goods, plain and fancy, and gray goods. Wants $1200 per year, and can take position immediately.

1625 **Assistant Supt. or Designer** on woolens. Has been through all departments of woolen mill and has taken a Philadelphia Textile School course. Practical experience on fancy cassimeres, coverts, hairlines, ladies' dress goods. Very well spoken of. Hard worker.

DYERS.

1733 **Dyer.** Age 33; married; a Scotchman. Worked in Scotland, and has been over seven years in this country as secondhand for a large manufacturing concern, with whom he is at present, but desires to change to a position where he will have full charge. Has handled cotton yarn from 10's to 80's in warp and skein, also experienced on worsted and silk yarns. Can furnish references as to character and ability.

1730 **Dyer.** Overseer or would take good secondhand job. Age 24; English; single. Chain warps, filling, raw stock, underwear and hosiery yarn, print yarn, cop bleaching.

1664 **Boss Dyer.** Age 40; Scotch, married. 14 years' experience as boss dyer. 20 years in all at trade. Has worked on wool, cotton, ramie, worsted, shoddy and union waste dyeing for overcoatings, linings, tweeds, cassimeres, plaids, flannels, and ladies' wear, also on all wool and union piece dyes, hosiery, knit goods, yarns, slubbing. Is practically familiar with scouring, bleaching, carbonizing, speck dyeing and mill soap making.

1778 **Dyer of Wool, Felt,** etc. Age 25; American; married. Refers to past employers.

1781 **Boss Dyer and Finisher.** Age 20; Scotch; single. All wool and cotton mixed blankets, fine and coarse flannel. Some cassimeres and shoddy goods. Refers to past employers.

1714 **Cotton Yarn Dyer.** Age 36; Scotch; married. Has had 15 years' experience on fast shades. Wants $4 00 to start.

FINISHERS.

1526 **Foreman of Finishing Room,** Folding Packing, etc Age 45; married; English. Has worked on white and colored goods and prints. Is acquainted with every kind of machinery used in his business. Has worked 11 years in this country. Can give good references.

1716 **Finisher.** Age 29; English; married. Has worked as wet finisher, shearer, gigger, second-hand and overseer. Prefers a mill making cassimeres, worsteds, dress goods and face finished goods. A high grade of goods. Is familiar with all kinds of American and English finishing machinery, and can keep same in the best of repairs. Prefers Eastern States. Can take position at one week's notice. Best of references.

1770 **Overseer of Finishing,** or would take secondhand position in large mill. Age 35; married; American. Cassimeres, cheviots, kerseys, meltons, chinchillas, dress goods and cloakings. Is familiar with all makes of machinery in woolen mills.

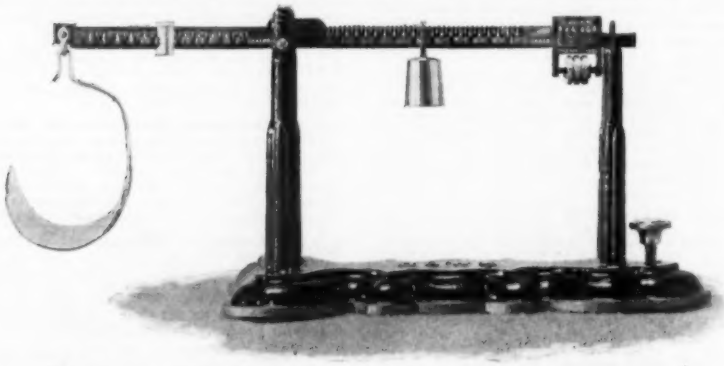
1771 **Boss Finisher,** or would take good secondhand position. Has worked on all classes of goods. Age 53; Scotch; married. Reason for his wishing to change is on account of mill where he is now employed not running steadily.

1763 **Overseer of Finishing,** desires position in the South. Age 38; Scotch; married. Fourteen years' experience; seven as secondhand and seven as overseer finishing. Ladies' dress goods of all descriptions. Wants $4.00 per day.

1761 **Finisher.** Is 27 years old, and has worked 12 years' in finishing room, and three years as overseer. Fancy cassimeres, cheviots, meltons, broadcloth and mixes. Can give good references, and will go anywhere. Wants, at least, $2.50 per day.

A ROVING or YARN SCALE

That will weigh by HALF GRAINS up to 1,000 GRAINS (over 2 1-4 oz.)



With the Weights All On The Beam. No Lost Weights With This Scale.

One of the Most Sensitive Scales Made. Positive and Accurate. Send for prices.

SWEET & DOYLE, - Cohoes, N. Y.

KNITTING MILL SUPPLIES.

☞We make Scales of Every Description.

Superior Locations for all kinds of Textile Mills

May be had at points on Southern Railway

Steady and remarkable success has attended the mills located on the Southern. It is the great Textile Line of the South. Mill Men and Mill Investors should investigate the advantages our districts afford.

We have now a number of excellent points for new Cotton Mills, or for Knitting Mills, where local capital will join with that from the North in new enterprises. If you are interested, write us.

M. V. RICHARDS,
Land and Industrial Agent, Southern Railway,
WASHINGTON, D. C.

FOR LEASE.

For a term of years, a seven (7) set KNITTING MILL with its full complement of up-to date machinery for carding, spinning and knitting, complete in all its appurtenances for making a very desirable line of goods. Location in the South within twelve hours' ride of New York City. Mill now and has been in constant operation for the past ten years. Possession January 1st, 1901. Ill health cause of present Lessee retiring. Goods very popular.

Address
N. K. & C. MFG. CO.,
Care of Textile World. BOSTON, MASS.

JULY NUMBER WANTED.

We will pay 25 cents apiece for copies of the July, 1900, issue of the TEXTILE WORLD in good condition. Also same for August issue.

TEXTILE WORLD,
620 Atlantic Ave., - Boston.

FOR SALE

PLANT SUITABLE FOR MANUFACTURE OF COTTON BATTING, OR WOOL SHODDIES. SITUATED ABOUT 20 MILES FROM ALBANY, N. Y.

Floor space 17,000 square feet, all in one story. Brick buildings, all separated by fire walls. Mill equipped throughout with sprinklers—good fire protection.

Machinery comprises 4 Butterworth Pickers, 6 large Smith Garnetts, 18 cards, Tolhurst Extractor, Dye Tubs, Cyclone Dryer, etc. Address Box 746, care of Textile World.

WANTED, A LINE OF HOSIERY.

A man who has had 21 years' experience in manufacturing of seamless hosiery and three years on the road west of Mississippi, wants a line of ladies,' men's and ribbed hosiery for Western trade, to sell in case lots only. Will sell on commission only. Sell also to jobbers. Good references. K. 206, care Textile World.

PRACTICAL MAN WANTED.

Wanted, by a good business man with $30,000 capital and good credit, a thoroughly practical man to manufacture some article made out of cotton. None but a man of good habits, strictest integrity and thorough practical knowledge of proposed business need apply. Climate particularly beneficial throat and chest troubles. Mineral Spring near, infallible cure most forms dyspepsia. Address, P. O. Box 25, Union Point, Ga.

WANTED.

A superintendent to take charge of small linen mill. Necessary that applicant have knowledge of carding, spinning and bleaching. Address, M. A. L., care Textile World, Boston.

AGENCY WANTED.

An experienced selling agent would like an account for Boston on any part of the New England States. Intimately acquainted with manufacturing and wholesale trade. Either salary or commission basis. Address F. CLEMENT HARRISON, 170 Summer Street, Room 208, Boston.

Designer and Superintendent.

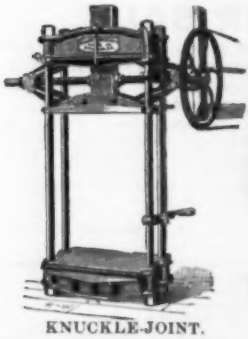
Energetic young man, competent and thoroughly acquainted with the manufacture of combed yarn, worsteds, cheviots and all kinds of overcoatings, now employed in one of the best known factories of Germany, wishes engagement with a large American establishment. Has made up very tasteful collections with great success. Address, K. A. 8718, care of Rudolf Mosse, Cologne on the Rhine, Germany.

COTTON MILL WANTED.

Pittsburg, Texas, has $60,000 ready to build a cotton mill, and wants practical mill man to invest $40,000 and take management. Address, First National Bank.

WANTED.

A Drying Cylinder, 5 ft. Diameter, 36 to 40 in. wide, with gear attached, and to stand 15 to 20 lbs. pressure, with or without frame. Address P. O. Box 1806, Paterson, N. J.



KNUCKLE-JOINT.

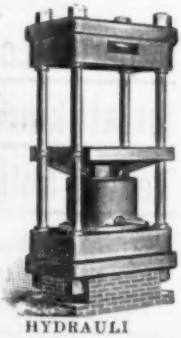
BOOMER & BOSCHERT

BALING PRESSES

ARE THE STANDARD.

Boomer & Boschert Press Co.

338 West Water St., SYRACUSE, N. Y.



HYDRAULI

EASTON AND BURNHAM MACHINE CO.,

Pawtucket, R.I.

ALL KINDS OF

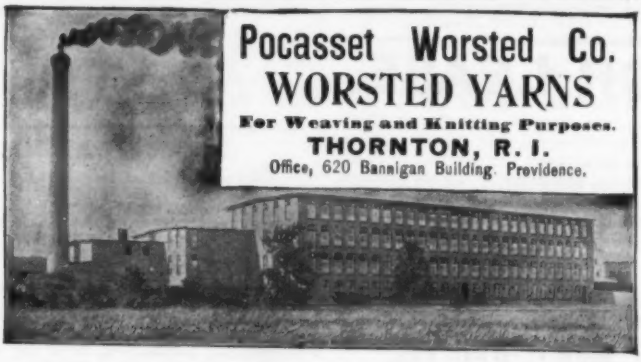
Spindles

USED IN THE MANUFACTURE OF

COTTON, WOOL & SILK

IMPROVED UPRIGHT SPOOLERS

TO SPOOL FROM COP, SKEIN, OR BOBBIN.



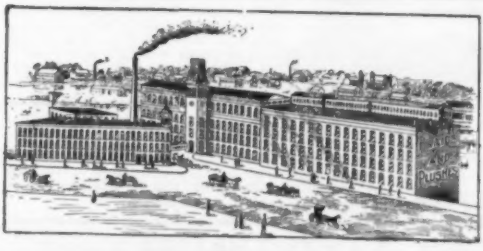
Pocasset Worsted Co.

WORSTED YARNS

For Weaving and Knitting Purposes.

THORNTON, R. I.

Office, 620 Bannigan Building. Providence.



FLYER SPUN

Mohair and Worsted

YARNS.

Mohair Plushes,

Worsted and Cotton Braids.

D. COFF & SONS, Pawtucket, R. I.

ESTABLISHED 1861.

YARN DEPARTMENT.

Eastern Yarn Market.

Cotton Yarn. Unusual conditions prevail in the yarn market today to such an extent as to surround the future movement of trade with an unusual degree of uncertainty.

Along with nearly every line of trade the weaver and knitter finds his business greatly restricted by the uncertainty as to the Presidential election.

They not only will not, in fact they cannot pay any advanced prices for yarn as long as prices for goods remain on present basis; and, when orders cannot be obtained for goods at even low prices, manufacturers feel little interest in laying in a stock of yarn at any price.

On the other hand, the spinner is unable to make any concession in prices owing to the dizzy height which the price of cotton has reached, and which promises to be still further increased.

Each side seems to be in a deadlock of its own, and the result is that business is practically at a standstill.

An additional element of uncertainty is added by the effort of yarn mills, both large and small, to change their method of marketing their product from the present commission house, brokerage system, to direct selling.

An undercurrent of hopefulness is found however on all sides. Spinners, weavers and knitters seem to feel that the election once over, and a safe governmental policy assured for another four years, the prices of cloth, knit goods, yarn and raw cotton will adjust themselves to each other and trade resume its normal movement.

Worsted Yarn. Worsted yarn spinners continue short of orders, although the outlook is improving and sample orders are being placed and wanted for immediate use. Weavers are interested in quotations but will not buy yarn to any extent until after the Presidential election. They say there is more inquiry for cloth and are very busy making and delivering sample pieces for light weight season. Many of them have just completed heavy weight orders as the season has been very late. The light weights have not been ordered to any extent. Users of cloth would not purchase on account of the business uncertainty resulting from a possible change in the administration, so that if orders for light weights are to be placed in any quantity in November (and from the number of sample pieces out, a large duplicate order business is predicted), it will necessitate a great rush for cloth, and weavers and spinners will again have more work than they can handle.

As has been predicted in these reports, the cloth mills and worsted spinners have been unable to run full since April. During the interval the clothiers have closed out much light weight cloth and as the last heavy weight season was one of cancellation, clothiers and commission men in consequence can have but a light stock of cloth on hand. Manufacturers will not buy largely of yarn at present because they do not know what size or quality they are to run on. They all believe that an advance of 5 to 10 cents per pound will follow the election of McKinley and although this is the general belief, weavers will not cover on yarn, but are anxious that spinners make prices which will hold after election or they will place orders if the spinners will agree not to make them take the yarn ordered.

The trend of the trade is toward a better quality of stock and finer sized yarn. The trade has been using so much coarse and poor quality of cloth that the public demand something better and the manufacturers are furnish-

Frank E. Patterson, Prest. Oscar W. Wood, Treas.

Germantown Spinning Co.

COTTON CARDED

HOSIERY YARNS

In numbers from 6s to 26s.

Germantown, Philadelphia.

W. Warren Thread Works,

SPOOL COTTON

on 100 to 12,000 yd. Spools or Tubes.

A Specialty of Thread for Manufacturers Use
on Spools, Tubes or Bobbins.

Also Seaming and Hosiery Yarns
on Cones, Tubes or Skein.

Our bleaching and dyeing facilities are new and unsurpassed for prompt and neat work. Correspondence solicited.

WESTFIELD, MASS.

The Best is the Cheapest.

It is BETTER and CHEAPER to wind yarn by the "Universal" system before shipment from the mill, thus insuring perfect delivery to knitting machines without rewinding.

UNIVERSAL WINDING CO.,

F. H. BISHOP, Manaoer.

95 South St., - Boston, Mass.

ing it. The weavers of cotton worsteds are getting tired of manufacturing them as the advance in cotton yarn has been so great that whatever profit there was in producing them has about disappeared, and consequently more all-wool and worsted will be produced.

The dress goods mills are not running well. Serges seem to be going out of date and the weavers to stay in the swim are taking on French spun yarn for filling and fine yarn for warps. The demand is for finer cloth, although buyers are still keeping out of the market.

The spinners of French yarn continue running on old orders. The outlook for further orders is good as knitters of hosiery and underwear must soon order for next season's business, as knitters are sampling and must place orders in November. The dress goods manufacturers will also use large quantities of this yarn for filling, during the next season.

Prices for all yarns are nominal with a certainty to advance 5 or 10 cents per pound in case of the success of the Republican party in November.

Woolen Yarn: Spinners of woolen yarn are running, but with orders much reduced in volume and prospects curtailed by cancellation. They started with good prospects for a very busy season but as the time developed the prospective orders were not forthcoming, and where the spinners had orders partially booked and contracts made to run their machinery, these contracts were suddenly withdrawn and mills were forced to look elsewhere for work. This has been particularly the case with all kinds of weaving and also the cloaking manufacturers. The knitters have ordered from time to time and have contracts placed which keep the spinners going. Orders for backing of fleece-lined underwear have been fairly well taken, but the recent advance in cotton has caused manufacturers to cheapen their goods by not using the merino yarn which they had been putting in the garments.

The manufacturers of hosiery and

CATLIN & CO.,
YARNS.
67 Chauncy St., Boston
316 Church St., New York.
306 Chestnut St., Philadelphia.

Walcott & Campbell Spinning Co,
IROQUOIS MILLS.
FANCY HOSIERY YARNS
IN ALL COLORS.
New York Mills, Oneida Co., N. Y.

JAMES E. MITCHELL & CO.,
Commission Merchants.
122 & 124 Chestnut St., Philadelpia, Pa.
74-78 Summer St., Boston.
Cotton, Woolen & Worsted Yarns.
All numbers on Hand and Made to Order.

TUCKER & COOK MFG. CO
MANUFACTURERS OF
WHITE AND COLORED COTTON **WARPS**
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
CONWAY, MASS.

GRANT YARN CO.,
COMBED AND CARDED COTTON.
YARNS 40s and above. AND
FITCHBURG, MASS. **WARPS**

E. JENCKES MFG. CO.
Colored Cotton Hosiery Yarns,
Double and Twist Yarns for
the Weaving Trade.
PAWTUCKET, - R. I.

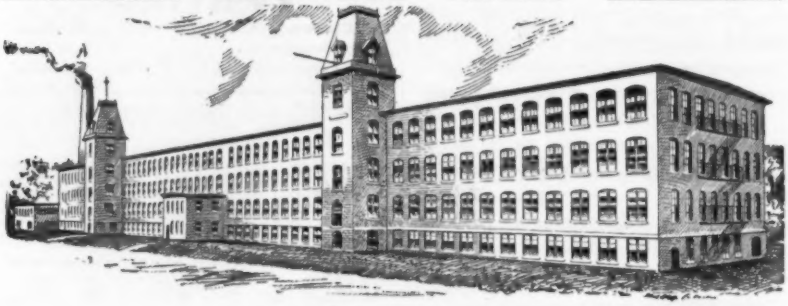
LINEN YARN IMPORTER.
Hughes Fawcett, 115 Franklin St., New York,
Flax, Hemp & Jute Line and Tow Yarns,
FOR WEAVING PURPOSES
Linen Jacquard Harness Twines.
Fine Cotton Harness and Heddle Twines.
For Cotton, Silk, Woolen and Carpet manufacturers. Correspondence solicited. Samples promptly furnished.

Eddy & Street,
COTTON, **YARNS** WORSTED,
WOOLEN, AND SPUN SILK.
BRAIDS
PROVIDENCE, R. I.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.



COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

WILLIAM FIRTH, PRESIDENT. FRANK B. COMINS, TREASURER.

AMERICAN MOISTENING COMPANY,

150 Devonshire St., Boston, Mass.

The "Drosophore" and "Vortex" Humidifiers.

Legal proceedings will at once be taken against infringers and users of infringements.

WE HAVE, WITH INSTALLATIONS IN HAND, ORDERS FOR OVER 2,000 HUMIDIFIERS.

COTTON YARNS

from 2s to 26s single and ply.
SPECIALTY—FIRE HOSE CORD and YARNS put up on tubes wound on Universal System.

WHITTIER MILLS, - - - - - LOWELL, MASS.

YARNS

SOLIS : : BOSTON.

179 Devonshire Street.

ANDREW J. SOLIS, Jr. & CO.

INDIAN ORCHARD COMPANY,

Indian Orchard, Mass.

Manufacturers of - - - -

COTTON WARPS AND YARNS
In gray and all colors, single or in any twist.

COLORED COTTON
Machined, Carded or in Roving.

NOVELTY YARNS

In Cotton, Mercirized Cotton, Silk and Worsted, in various Patterns, Colors and Twists.
We are always pleased to assist our patrons of the Woolen Goods manufacture in special pattern warps for samples.
We use a uniform grade of long stapled cotton in all our manufacture.

underwear are having a much better business at this time than they have had any time within the last two years and these mills are very well employed. It is also noted that orders for underwear and other fabrics of this kind have been placed sparingly, as the buyers declare that while they believe that McKinley will be elected, yet until the election has been fully decided they will not place their full quota of orders.

The wool dealers have been offering manufacturers some very cheap lots of wool and the boldest have placed orders covering some of their requirements. It is an undoubted fact, however, that the small manufacturers are very short of wool and it has been frequently asserted by these manufacturers that they will be in the market to buy wool in good quantities after the election.

Australian stocks of all kinds are beginning to be in demand and manufacturers who have been using stocks which they have owned for three or four years, now find that they must buy on the market and pay the import price. Australian lamb's wool is being imported as is also Australian thread waste. The demand for fine stock is universal among the hosiery and underwear trade.

The manufacturers have been buying fine wastes from the domestic worsted mills but as the past six months has been a most disastrous one to combers and spinners and as these mills have been running on coarser grades of wool, these fine wastes must now be largely imported and will be imported at prices for threads ranging from 55 to 63 cents per pound, and Australian lamb's wool for from 77 to 80 cents per pound.

As has been the case throughout the year, the attitude of holders of wool in London is likely again to determine the future course of prices. If they meet the market freely the ultimate return to a better state of things may be reasonably assured. If, on the

EICHMANN & STERNBERG
530 Broadway cor. Spring St., NEW YORK.
Mercerized, Turkey Red, Gassed } Cotton Yarns.
Jacquard and Harness Twines.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
S.W. COR. FIFTH & MARKET STS.,
Philadelphia.

DEXTER YARN CO.
Cotton Yarns in Cops, Cones and Skeins; on Beams or Spools, Single and Twisted. Cable Cords and Twines.
PAWTUCKET, - R. I.

COLCHESTER MILLS,
Thos. F. Patterson, Treas.
Spinners of
COTTON YARNS.
Sales in charge of
A. D. SALKELD,
908 & 909 New York Life Building,
346 Broadway, New York

Knitting and Weaving Yarns

Cones, Cops, Warps, Skeins,
Single, Double, Three-ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment.

EDWARD S. HYDE, 223 and 225 Chestnut Street, Philadelphia, Pa.

GREENE & DANIELS MFG. CO.,
COMBED, CARDED AND GASSED
Yarns, Threads, Twines and Chain Warps,
Colored and Bleached Yarns Furnished in any manner desired by the trade. **PAWTUCKET, R.I.**

MONUMENT MILLS,
Manufacturers of
White, Colored, Fancy and Double and Twist, **COTTON WARPS**
HOUSATONIC, MASS. 4s to 60s.

The J. R. MONTGOMERY CO.,
WINDSOR LOCKS, CONN.
Manufacturers of
Mercerized Cotton Yarns. GIVES THE HIGH SILK-LIKE LUSTRE IN KNIT GOODS AND WOVEN FABRICS
Novelty Yarns. BOUCLE, BOURETTE AND SPIRALS, IN COTTON, WOOL, WORSTED, MOHAIR AND SILK.
Cotton Warps. ON BEAMS, JACK SPOOLS AND TUBES. IN FANCY TWIST COLORS AND PRINTED.

Incorporated 1899.
AMERICAN COTTON YARN EXCHANGE
Long Distance Telephone, Boston 1100.
AMERICAN
Cotton Yarn Exchange
COMBED AND CARDED COTTON YARNS
From Northern and Southern Mills.
American, Egyptian, Peruvian and Sea Islands.
ARNOLD B. SANFORD, Pres. and Gen. Mgr.
67 Chauncy St.,
BOSTON, - - MASS.

R. GREENWOOD & BAULT,
GLOBE DYE and BLEACH WORKS,
Frankford, Philadelphia, Pa.
Dyers, Bleachers and Mercerizers of Warps and Skein Dyeing.

H. HIRSCHMAN,
Direct selling Agent for Hosiery, Knit Goods and Underwear.
Reliable accounts solicited.
419 Broome St., NEW YORK.

other hand, they pursue the policy of keeping large and old supplies in sight of the consumer, the outlook must, with the new clips coming, remain more or less doubtful. The present prices tempt manufacturers and many sales of all descriptions, especially merinos, have taken place. To show the decrease in the consumption of wool in France alone, the total quantity of tops for the first eight months of 1900, shows a decrease of 21 million pounds as compared with the same period of 1899. Thread waste and noils, if purchased largely by manufacturers in the United States will become scarce on account of the reduced production of goods in Europe.

Philadelphia Cotton Yarn Market.

The yarn market has been wild the past few weeks, on account of the demoralized condition of the cotton market. Spinners have settled down, to the idea that cotton is going to be high priced, throughout this crop. They believe some natural reaction will take place, while cotton is coming in pretty fast, but as soon as the receipts drop off, which should be very early, according to all reports, they believe the market will react sharply, even above present figures.

On this basis, most of the spinners we come in contact with, are willing to get their cotton all bought for the year, before December and January, if possible, believing they will not be able to get it cheaper after that, but that prices will be higher.

Recent orders on knitting yarns, have been offered in large quantities, at 2c. to 3c. advance on old prices.

Spinners are generally fairly well sold up in hosiery yarn, so are in an independent position, and do not need to sell anything, until they can buy cotton.

In weaving yarn, the trade is much poorer, but good advances have been scored, as spinners were positively obliged to get higher prices or shut down their mills.

FRENCH SYSTEM. BRADFORD SYSTEM
B. F. BOYER & CO.,
MANUFACTURERS OF
Worsted and Woolen Yarns
OFFICE AND MILL: Delaware and Cooper Streets. CAMDEN, N. J.

WAVERLY WORSTED CO.
SPINNERS OF
WORSTED YARNS
FOR WEAVING AND KNITTING.
Main St. & Green Lane, Manayunk, Philadelphia.

DAVIDSON & BROOKE,
ORIANNA BLEACH WORKS,
Bleachers
Of Turkish Towels, Cotton Yarns, Underwear, Tapes and Hosiery.
2562-62-64 No. 3rd St., PHILA., PA.

A. HERBST. J. W. JONES
HERBST & JONES,
KENNEBEC WORSTED MILLS.
Successors to Kershaw Worsted Co.
WORSTED YARN SPINNERS,
21st & Naudain Streets,
PHILADELPHIA.

RICHARD CAMPION,
Selling Agent for—
Bristol Worsted Mills,
Highland Worsted Mills.
17 Bank Street, Philadelphia, Pa.

PLATT BROS.,
Woolen Yarns.
Main and Wa'nut Sts., - - Manayunk, Pa.
Correspondence solicited.

HOWLAND CROFT, SONS & CO.

LINDEN WORSTED MILLS.

Fine Worsted Yarns

OFFICE AND MILLS:

Broadway and Jefferson Ave., Camden, N. J.

Represented by FIRTH BROADHEAD,
937 Banigan Building, Providence, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

Worsted YARNS,

ALL NUMBERS SINGLE AND TWO-PLY,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes.

Office and Mills: Frankford Ave. and Westmoreland St., Phila., Pa.

CRANSTON WORSTED MILLS.

Worsted and Mohair Yarns — white or colors, in skeins, on spools, cones, or shuttle bobbins.

NOVELTY YARNS — of Mohair and Worsted. We are the only manufacturers in the United States making these yarns from the raw material to finished product and making Yarns **only.**

CENAPPED YARNS of all kinds. Doup Yarns. Harness Yarns. For Braids, etc.

...Dyers of Yarn and Slubbing...

BRISTOL, R. I.

George Campbell & Co.

Worsted Spinners.

Yarns, both French System and Bradford.

Knitting Yarns in all Grades and Mixes.
All Numbers to 60s.

21ST STREET AND WASHINGTON AVENUE, PHILADELPHIA.

MALCOLM MILLS CO.,

MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA.

The recent list price on Southern knitting yarns, is as follows, we understand that only the poorer qualities of yarn are expected to be sold at these prices. The higher qualities bring ½ to 1c. advance. We quote:—

Southern Cones:— Frame yarn:—	
Up to No. 8s	17¾
9s and 10s	18
14s	19
18s	20
20s	20½
22s	21

The majority of spinners add ⅜c. for each number above 16s, and ½c. above 20s, per number.

Warps:—	
20/1	18
22/1	18½ to 19
16/1	17½ to 18
14/1	17 to 17½

Warps (two ply):—	
14s	17½ to 18
16s	18 to 18½
20s	19 to 19½
30s	22 to 23
40s	28 to 30

Skein:—	
8s to 10s single	16½ to 17
12s to 14s	17 to 17½
16s	18 to 18½
20s	18 to 19
22s	19 to 19½
8/3	15 to 15½
12/2	16 to 16½
14/2	16½
20/2	18½ to 19
30/2	22 to 22½
40/2	28 to 30

Eastern Hosiery yarns:—	
10s cones	19⅞
12s "	20⅞
14s "	21⅞
18s "	22⅞
20s "	23⅞

Worsted, woolen and merino yarns are dull, but they are in somewhat better demand than formerly. Some woolen spinners are sampling on specialties.

Spinners of cotton, on woolen machinery are working fairly full time, on coarse numbers, at low prices.

SILK NOILS AND SILK NOIL YARNS
IN WHITE AND COLORS.
MOHAIR LOOPS, KNOTS, AND FANCY YARNS FOR DRESS GOODS AND CLOAKINGS.
A. T. SKERRY & CO., 47 LEONARD ST., NEW YORK.

Weaving and Knitting Yarns.
Sanitary and Fancy Mixes
Wolstenholme & Clark,
Worsted and Worsted Merino Yarns.
FRENCH SYSTEM.
Mills, Baker and Mallory Sts.
No. Manayunk, Philadelphia, Pa.

JOHN J. KAY,
DEALER IN
Cotton and Wool Waste.
OFFICE AND WAREHOUSE:
Nos. 132 to 134 E. Allen Street, PHILADELPHIA, PA.
Correspondence Solicited

Philadelphia Wool Scouring
AND Carbonizing Company.
Fine AUSTRALIAN NOILS a Specialty.
Correspondence Solicited.
HN LUNN, Pres. & Mgr., 107 Erie St., Camden, N. J.

CHENEY BROTHERS,

SILK MANUFACTURERS.

ALL KINDS OF

Knitting Silks, Ribbons AND Piece Silks,

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silk for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

SALESROOMS: 477, 479 and 481 Broome Street, NEW YORK.
929 Chestnut St., PHILADELPHIA.
79 Chauncy Street, BOSTON.
186 Franklin Street, CHICAGO.

WILLIAM RYLE & CO.,

DEALERS IN

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Foreign and domestic

SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., - NEW YORK.

THE SECRET

of our popularity is no secret to our customers Experience has taught them that we give them better work and better service than they can get elsewhere.

T. BROPHY'S SONS, Jasper Street above Clearfield Street, PHILADELPHIA.

Dyers of All Kinds of Yarn and Cotton Warps.

ATLAS FOUNDRY & MACHINE CO.,

SUCCESSORS TO **ATLAS MFG. CO.**

Manufacturers of

Wool Burring, Picking and Mixing Machinery, PARKHURST DOUBLE CYLINDER BURR PICKERS, Steel Ring and Metalic Burring Machines and Feed Rollers, Etc.

OLD METALIC BURR CYLINDERS COVERED WITH STEEL RINGS Self Feeders for Pickers and Cards, Picker and Machine Brushes, Atlas Improved Side Drawing Machines and Creel.

INQUIRE ABOUT OUR NEW AUTOMATIC WOOL DUSTER.

BELLEVILLE, N. J.

PROVIDENCE DYE WORKS.

Dyers and Finishers,

COTTON YARNS, Suited for HOSIERY and WEAVING Cotton, Woolen and Worsted DRESS GOODS, Woolen and Worsted Mixed CASSIMERES and CLOAKINGS, also Woolen and Worsted Slubbing, COTTON YARN and WARP DYERS and BLEACHERS.

FIRTH & FOSTER CO.,

OFFICES: Philadelphia, 546 Bourse Building.
New York Office, Silk Exchange, Broadway and Broome St.
WORKS: Taylor, Emerald and Adams St., Kensington, Philadelphia, Pa.

Pawtucket Dyeing & Bleaching Co.,

BLEACHERS AND DYERS OF

COTTON YARNS AND STOCKINET.

OFFICE WITH BLODGETT & ORSWELL CO., Manufacturers of Glazed Yarns,
232 FRONT ST., PAWTUCKET, R. I.

DUNCAN & BAILLIE,

COHOES DYE WORKS,

NEWCOMB STREET
COHOES, N. Y.

Dyers of Raw Cotton, Wool and Knit Goods.

Satisfaction Guaranteed.
Capacity 10,000 lbs. per day. Prompt Deliveries.

We Do Bleaching and Dyeing

ESPECIALLY FOR THE **Knit Goods Trade.**

Give Us A Trial.

SAMUEL ROWLAND, Schuylkill Haven Bleach and Dye Works.
SCHUYLKILL HAVEN, PA.

HOME BLEACH AND DYE WORKS,

PETER B. McMANUS, Proprietor.

Dyers and Bleachers of Cotton Yarns,

PAWTUCKET, R. I.

The Wm. H. Lorimer's Sons Co.

MERCERIZERS AND DYERS,

DEALERS IN
MERCERIZED COTTON YARNS
All Numbers Up to 140s 2 Ply In
Combed Peelers, Egyptians, &
Sea Islands . . . . .

Ontario & Lawrence Sts.,
Philadelphia, Pa.

FAST COLORS

For Wool, Woolen and Cotton Yarn and Piece Goods Dyeing, and for Calico Printing

ALIZARINE RED, PASTE AND POWDER.

Alizarine Blues, Oranges, Browns, Yellows, Maroon, Gray and Black.
Cœruleine, Galleine, Mythylene Grays.
Thionine Blues, Thionine Indigo, Solid Green and
PATENT BLUES (superseding Extracts of Indigo on account of fastness and color bloom) for Wool and Silk, Benzidine and Primuline Colors, Zinc Dust, Aniline Salts and Oil.

VICTOR KOECHL & CO. 122 HUDSON ST., NEW YORK.

SOLE AGENTS FOR

FARBWERKE, formerly MEISTER, LUCIUS & BRUENING, HOECHST o | M.; A. LEONHARDT & CO., Muehlheim o | M.

BRANCH OFFICES:

Boston, Mass., 138 Milk St.; Philadelphia, Pa., 39 N. Front St.; Providence, 45 S. Main St.

COLUMBIA PRINT WORKS,

Bleachers, Dyers, Printers and Finishers,

OF ALL KINDS OF FABRICS.

3-4 and 6-4 Woolens and Mixed Cassimeres,

ALSO

Cottons and Linens.

JOHN CAPSTICK & SONS, Montville, N. J.

Freight via D. L. & W. R. R.

New York Office, Lawrence Building, 190 West Broadway.

WM. DUDLEY, Pres. ISAAC H. ROGERS, Treas. JOHN McPARLAN, Mgr.

PHILADELPHIA LINEN FINISHING COMPANY,

BLEACHERS AND FINISHERS OF LINEN

Towels and Damask, also Turkey Red Damask, Centre Covers, Doylies, Napkins, Carriage Robes, Dusters, etc.

Frankford Ave. and Tacony St., Frankford, Phila., Pa.

J. HOWELL JONES,

ANILINES for { COTTON, WOOL and LEATHER.

18 BURLING SLIP, - NEW YORK.

Telephone 3799 John.

WM. J. MATHESON & CO., Ltd.

IMPORTERS AND MANUFACTURERS OF

DYE STUFFS

New York,
Boston,
Philadelphia,
Providence,
Charlotte, N.C.,
Montreal, Canada.

FARBENFABRIKEN OF ELBERFELD CO.

40 STONE STREET, NEW YORK.

BOSTON. PHILADELPHIA. CHICAGO

Alizarine Black-Bayer

(DIAMOND BLACK.)

THE SHARPLESS DYE-WOOD EXTRACT CO.,

OFFICES: 648, 650, 651 THE BOURSE, PHILADELPHIA.

Warehouse: 22 N. Front St., PHILADELPHIA. Works: CHESTER, PA.

—MANUFACTURERS OF—

DYEWOODS AND EXTRACTS.

LOGWOOD.
FUSTIC.
BARK.
BLACK DYE.
CUTCH.

MOLT BROS.,

MILLBURY, MASS.

—MANUFACTURERS OF—

INDIGO BLUE DYE

Wool Scouring, Raw Stock in Piece.
Dyeing all shades. Unions and shades.

All work done by experienced workmen and guaranteed to give satisfaction.

OAKES MANUFACTURING CO.,

Hematine, Extracts of Dyewoods, Chemicals.

New York. Boston. Philadelphia. Atlanta.

NEW BLACK FOR COTTON.

COLONIAL BLACK

DOUBLE STRENGTH. UNEQUALED FOR DEPTH OF SHADE.
Users of Black should investigate. Fastest Cotton Black on the market.

F. E. ATTEAUX & CO., - - - BOSTON, MASS.

Branches: New York, Philadelphia, Chicago, Gloversville, N. Y., Toronto and Montreal.

C. J. LITTLEWOOD & SONS, Ltd.

ALBION

DYE and BLEACH WORKS,

MANAYUNK, PA.

DYERS of Cotton, Cotton Yarns, Wool and Raw Stock Generally. BLEACHERS of Cotton and Cotton Yarn.

CITY OFFICE: 132 Chestnut Street. Telephone Connection,
PHILADELPHIA. MAIN OFFICE AT THE WORKS.

E. M. THAYER

Importer and Manufacturer,
106 AND 112 BROAD STREET,
BOSTON, MASS.

ANILINES

Special Colors for
COTTON, WOOL, SILK AND MIXED GOODS.

ALIZARINES, EXTRACT CUTCH, GAMBIER, SUMAC, LOGWOOD, Etc.
SCOURING COMPOUNDS, COTTON SOFTENERS, MILL SUPPLIES.

JOHN J. KELLER & CO.,

104 and 106 MURRAY STREET, NEW YORK.

220 Church St., Philadelphia. 135 Pearl St., Boston.

18 Pryor St., Atlanta, Ga.

Aniline Colors,
Dyewood Extracts,
Sumac and
Nutgall Extracts.

FAST COLORS for wool dyeing, one dip cotton colors, novelties and specialties for calico printing.

— MANUFACTURED BY —

JOHN R. GEIGY & CO., BASLE, SWITZERLAND.

New York
100 William St.
Boston
163 Oliver St.

Philadelphia
109 No. Water St.
Chicago
145 Kinzie St.

Schoellkopf
Hartford & Hanna Co.
BUFFALO.

.....American

Aniline Colors

Dyestuffs and
Chemicals

Neenah
Watertown
Paterson
Central Building
Providence
33 Exchange Place

Milwaukee
105 Reed St.
Cincinnati
Kansas City
413 West 5th St.

SADLER & COMPANY, Ltd.

MIDDLESBROUGH, ENGLAND,

Manufacturers of

ALIZARINES

desire to notify the trade that they have recommenced the manufacture of Alizarines, and having completely remodeled their works, and installed new and modern Machinery, are prepared to offer their products to American Manufacturers, Print-works and Dyers, with every assurance as to the quality and uniformity of their products.

Product Samples, with Dyed and Printed Samples may be obtained from

SYKES & STREET,

New York. Boston. Philadelphia.

THE STAMFORD MANUFACTURING CO.

MANUFACTURERS OF

CUT and GROUND DYEWOODS,

Dyewood Extracts and Liquors,

FLAVINES.

Importers of CHEMICALS and DYESTUFFS.

183-187 Front Street, - New York.

O. S. JANNEY & CO.,

INDIGO and SHELLAC

Besides the Natural Dye Stuffs, Chemicals, Etc., we Carry a Full Line of Aniline Colors.

Correspondence Requested.

10 Kilby Street. BOSTON.

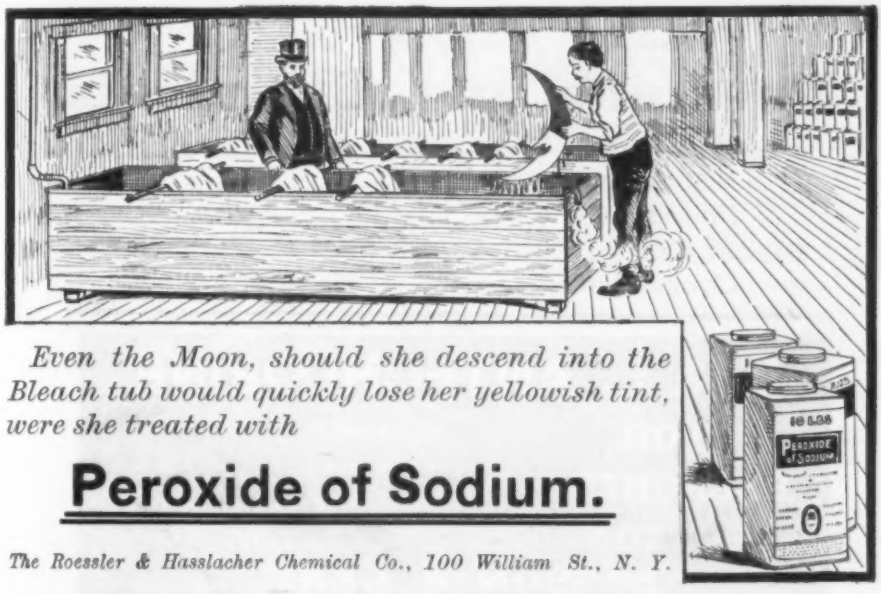
8 and 10 Letitia Street. PHILADELPHIA.

C. BISCHOFF & CO.,

87 and 89 Park Place, New York. Branches, 139 S. Front St., Phila. 124-126 Purchase St., Boston.

Rhodamines, Patented.

Alizarine Blacks, Patented.



Even the Moon, should she descend into the Bleach tub would quickly lose her yellowish tint, were she treated with

Peroxide of Sodium.

The Roessler & Hasslacher Chemical Co., 100 William St., N. Y.

Berlin Aniline Works,

72 Front Street, NEW YORK.

124 Pearl Street, Boston, Mass. 122 Walnut Street, Philadelphia, Pa.

Manufacturers of

ANILINE COLORS,

New York and Boston Dyewood Company,

MANUFACTURERS OF

DYEWOOD EXTRACTS.

Aniline Colors! Specialties in Direct Dyeing Colors. Shades matched, and samples furnished on application.

NEW YORK: 55 BEEKMAN ST. PHILADELPHIA: 122 ARCH ST
BOSTON: 115 HIGH ST. HAMILTON, ONTARIO.

A. KLIPSTEIN & CO..

NEW YORK. BOSTON. PROVIDENCE. PHILADELPHIA.
CHICAGO. CINCINNATI. HAMILTON.

Dyestuffs and Chemicals.

Fast Colors for Wool.
Dry Alizarine.
Phenocyanine,
Direct Cotton Colors.
Congo Red,

Refined Cutch A. K. C.
Caustic Potash.
Azo Colors.
Napthol Yellow.

B. & L. ANTI-CHLORINE

FOR BLEACHING COTTON

No Acid,
No Soap,
No Trouble,
No Tender Yarn.

BOSSON & LANE,
Sole Manufacturers. BOSTON.

Established 1834. H. G. JOHNSON, Proprietor

Wm. G. Johnson Co.

Manufacturers of

DYEWOODS

Logwood Extracts, - - -
Ground and Bolted Camwoods
And other Fancy Woods. -

All Goods Warranted Uniform.

Long Distance Telephone. UNCASVILLE, CONN.

WEST INDIES CHEMICAL WORKS, Ltd.,

MANUFACTURERS OF PURE **LOGWOOD EXTRACTS** SPANISH TOWN, JAMAICA, W. I.

DILLON & CO., 20 Cedar St., New York, SOLE AGENTS FOR THE UNITED STATES AND CANADA.

S. J. COREY,

273 Congress St., Boston, Mass.

Dyestuffs and Chemicals.

INDIGO

Dyewoods and Extracts.

Phthalein, Alizarine and other fast colors for Cotton, Wool and Silk. Shades matched and full particulars sent on application.

Nubia One Dip Fast Black for Woolens. Lion Ammonia Wool Scourer, etc. Agent for Stutz & Co., London, W. F. Stutz, Calcutta and Williams & Co., Madras.

American Aniline Company,

Importers and Manufacturers of

ANILINE COLORS, CHEMICALS and EXTRACTS

163 North Front Street, PHILADELPHIA.

ESTABLISHED 1865.

ANCHOR COLOR MANUF'NG CO.,

Importers and Manufacturers

ANILINES, DYESTUFFS and CHEMICALS.

New Belgium Blue. . . .

Direct Colors for Cotton, Wool and Mixed Goods.

462-466 Cherry St., NEW YORK

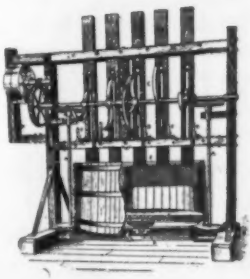
TAUNTON-NEW BEDFORD COPPER CO.,

NEW BEDFORD, MASS.

Copper Printing Rollers, Singe Plates and Sheets.

OUR GUARANTEE: { Superior Quality. Prompt Shipments.

IMPROVED TOM-TOM



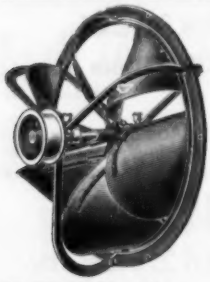
For Dye Houses, Knitting and Woolen Mills.

The Most Up-to-Date Washing and Dyeing Machine ON THE MARKET.

Double Upright Gearing. Attachment for Greasing Bearing of Hub. Large Single Centre Cam, giving but One Operation to Centre Plunger. Catches to hold Plungers when not in Operation Full Automatic. Centre Steady Bar, adding Strength to Frame and Steadying Main Shaft. Lid to Tub keeping Liquid confined, avoiding Splashing around Machine. Constructed of Best Material. Five Plunger Machine, washes 250 lbs. Goods in one operation. For further particulars address

FRANK'S WAGON WORKS,

2731-35 North Sixth Street - - PHILADELPHIA, PA

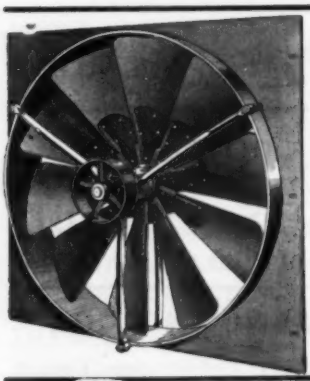


23 West First St.,
BOSTON.

FOR **Drying**

AND REMOVING **Steam**

USE THE BERRY WHEEL.



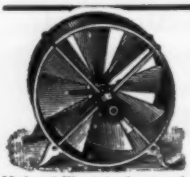
"CYCLONE" FAN,

Moderate in Price,
Substantially Built,
Unique in Design.

Write for New Catalogue.

Phila. Textile Machinery Co.,

2750-60 HANCOCK ST., PHILA., PA.



Made of Wrought Iron, and Steel Blades.

STEAM HEATING. VENTILATING.

CEO. MATTERN,
VENTILATING ENGINEER,
and General Contractor.
26 Clinton Place, 44 East 8th St., New York.

Manufacturer of **Exhaust Wheels** for Mechanical Ventilating, Cooling, Drying, Removing Steam, Dust, Smoke, etc. Electric Motors and Wiring. Sheet Iron Work.

From 1 to 6 ft. in Diameter.

NEW ENGLAND
Ventilating and Heating Company.

Our system of Ventilating and Drying by air circulation will improve quality and increase production.

PLANS AND ESTIMATES ON APPLICATION.

OFFICE AND WORKS:

926, 928 and 930 Manton Avenue, Providence, R. I.

CARD GRINDERS

—FOR—

COTTON, WOOLEN AND WORSTED,

Manufactured and fully guaranteed by the

HARDY MACHINE COMPANY, - Biddeford, Me.

REPAIRS PROMPTLY ATTENDED TO.

Write for information and prices.

BLEACHING AND DYEING MACHINERY.

SKY BLUING AND CUTTING MACHINES.
CALENDERS, STARCH MANGLES, CALENDER ROLLS OF PAPER, COTTON AND HUSK.
ANILINE BLACK MACHINES.
CHROME DYEING MACHINES.
ANILINE AGEING MACHINES.

BEST WORKMANSHIP AND MATERIALS.

PHENIX IRON FOUNDRY, PROVIDENCE, R. I.
CHAS. R. EARLE, Pres. and Treas, M. W. GARDINER, Jr., Sec'y.

Birch Bros.

Somerville Machine Works.

Somerville, - Mass.

CONTINUOUS CRABBING MACHINES.

IMPROVED TENTERING MACHINES
for Woolen and Worsted Finishers.

SEWING MACHINES
will sew wet or dry.

Also, full line of BLEACHING, DYEING and FINISHING MACHINERY.
SEND FOR CIRCULARS AND PRICES.

THE LINCOLN COMPANY,

MANUFACTURERS OF IMPROVED MACHINERY FOR

Bleaching, Dyeing, Drying and Finishing.

AUTOMATIC SELF-FEEDING TENTERING MACHINES.
CONTINUOUS CHAINLESS STEAMING MACHINES.

Complete Plants for BLEACHING, ANILINE BLACKS AND INDIGOS.

54 to 70 Arch Street, HARTFORD, CONN.

ARLINGTON MACHINE WORKS,

ARTHUR BIRCH, Treasurer,

BLEACHERY, DYE, PRINT and FINISHING WORKS MACHINERY.

WRITE FOR PRICES **Arlington Heights, (Near Boston) Mass.**

SNEDIKER & CARR,

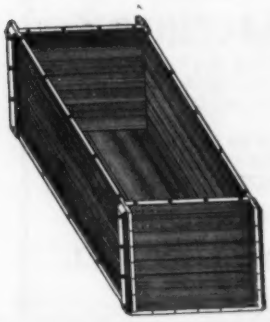
MANUFACTURERS OF

Circulating and Ventilating

FANS.

Write for Illustrated Catalogue.

139-141 N. 7th St., Philadelphia, Pa.



Practically Everlasting

can truthfully be said of the

CALDWELL CYPRESS TANKS

MOREOVER, they are Impervious to the action of acids. Impart no taste or color the contents.

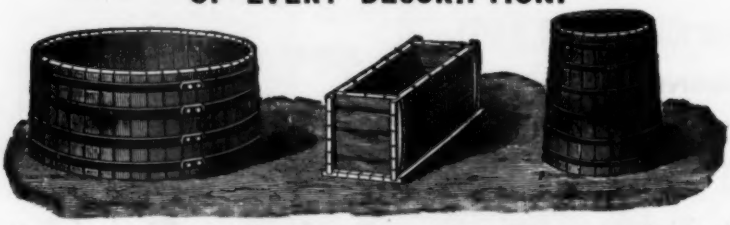
Do not shrink or swell, being made of dry material.

Write for handsome Catalogue "O" of Tanks and Towers to

W. E. CALDWELL CO., 202 Brook St., LOUISVILLE, KY.

Cypress Tanks and Vats

OF EVERY DESCRIPTION.



Cypress is remarkable for its great durability. There is no other wood so well adapted for the manufacture of Tanks, Vats, Cisterns, Dye Tubs, etc. We handle Cypress from the Stump, and our stock is of the best.

Our Tank Factory is complete. Let us know your wants.

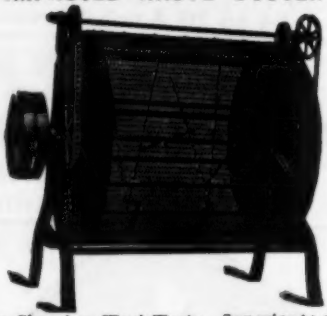
THE A. T. STEARNS LUMBER CO., BOSTON.

The Cypress Lumber Co.

CYPRESS TANK . . . FACTORY.

APALACHICOLA, FLORIDA.

IMPROVED WASTE DUSTER



For Cleaning Wool Waste. Superior to any now in use. Manufactured by the Stillman-Randall Machine Co., Westerly, R.I. Send for circular.

GEORGE WOOLFORD, Cedar & Cypress Tank & Vat Factory.

OFFICE:

Real Estate Trust Building, S. E. Cor. Broad and Chestnut Streets, Phila. Works, Darby Sta., Pa. P. W. & B. R. R.

Wood Tanks and Dye Tubs of all kinds and for all purposes of any design or size. Our New Plant is large and well equipped and our yard is well stocked with best material. Send for estimates on anything in the tank line and I will guarantee satisfaction.

Delahunty Dyeing Machine Co.

PITTSTON, PA.

Manufacturers of

Dyeing Machinery

for

Raw Stock, Wool, Cotton, Rags, Shoddy, Waste etc.

Hosiery Dyeing,

Shirts, and Drawers, Hats and Caps.

Chroming and Hosiery Oxidizing Machines.

Machines are placed on trial. Guaranteed to do first class work or no sale.

WEBENDORFER & WALLING

— MANUFACTURERS OF —

Silk Dyeing Machinery,

Hydo Extractors,
Washing Machines,
Stretching Machines,
Singeing Machines,
Beating Machines,
Wringers, Etc.,

... Also ...

Finishing Machinery,
Calenders, Button Breakers, Etc.

PATERSON, N. J.

Telephone Connection. **Correspondence Solicited.**

HUNTER'S IMPROVED CLOTH WASHER

For Four, Six and Eight Strings of Goods.

Power transmitted by means of a Friction Pulley.
No Shifting of Belt to start and stop the machine.
Less power required than for any other Washer of equal capacity.
All Main Bearings are adjustable. All Bearings are on the outside of frames.
No dripping of Oil on the Goods, or in the Wash Box.

Also Combination Washer and Fuller for Knit Goods in the String.

Write for further particulars and prices

JAMES HUNTER MACHINE CO.,

North Adams, Mass.

Boston Office, Room 67, Mason Building, 70 Kilby St.

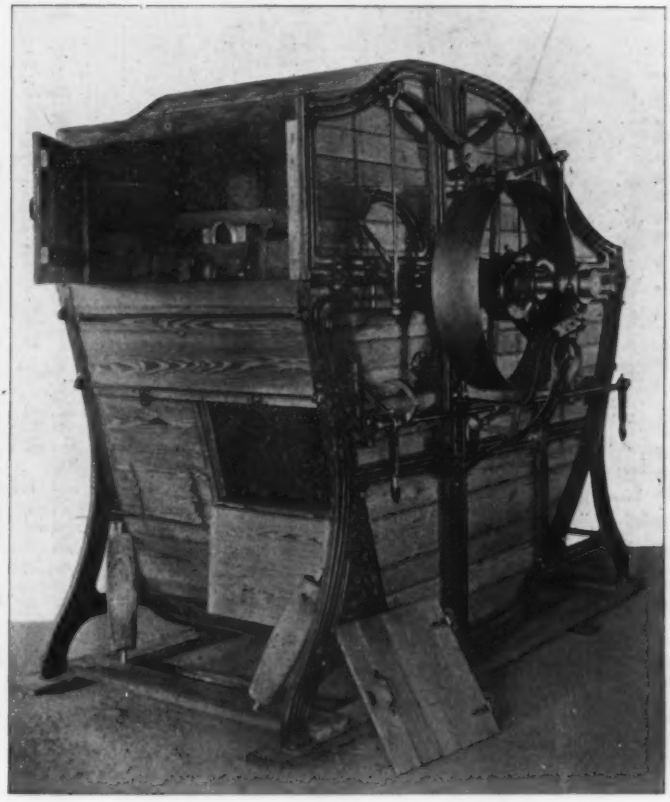
Long Distance Telephone, 2954.

THE HOPKINS

IMPROVED CLOTH WASHER.

Patented March 17, 1874. Improved 1885, 1890, 1896, 1900.

NEW FEATURES AND IMPROVEMENTS.



AN UP-TO-DATE MACHINE IN EVERY WAY.

Manufactured Solely by **HOPKINS MACHINE WORKS**

BRIDGETON and PROVIDENCE, R. I.

...Builders of...

Cloth Washers, Fulling Mills, Reel Tubs, Dye Tubs, Vats, Tanks, &c.

WRITE FOR PRICES AND REFERENCES.

☞See Description of our new pattern mill in the Woolen Department this issue.

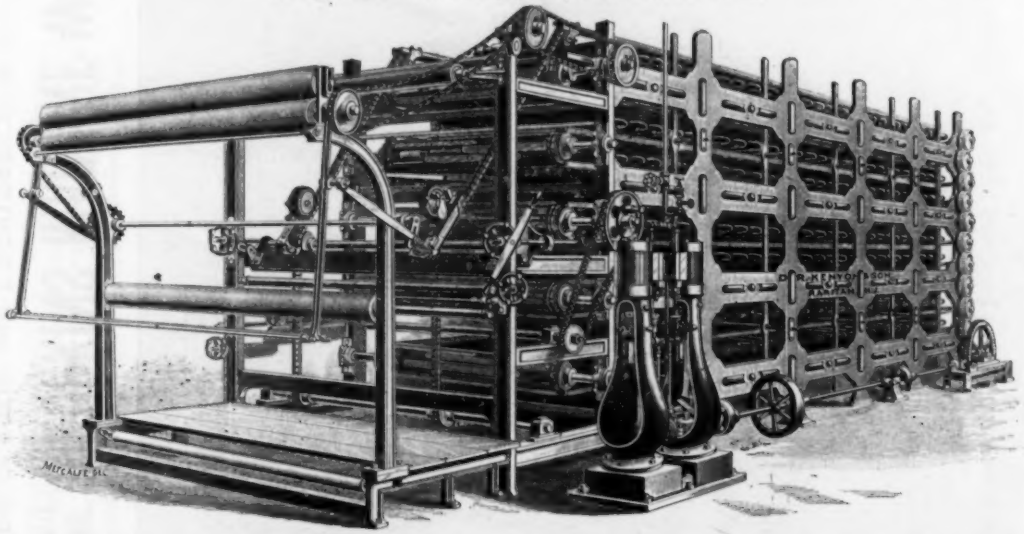
TENTERING AND DRYING MACHINES,

WITH LOW DOWN FEED.

Patented Feb. 26, 1895.

Long Distance Telephone, Somerville 40-B.

Hot Air Drying and Tentering Machines.



Tentering and Drying Machines on Pipe System. Special Dryers for Heavy Felt Goods.

Fulling Mills, Washers, Chinchilla and Whitney Machines, Whipping Machines, Cone Willows, Marsden & Blamire Lap Feed, Dyeing Machines for Piece Goods, Soaping Machines, Wringing Machines, Jigs (double or single,) Dewing Machines, etc.

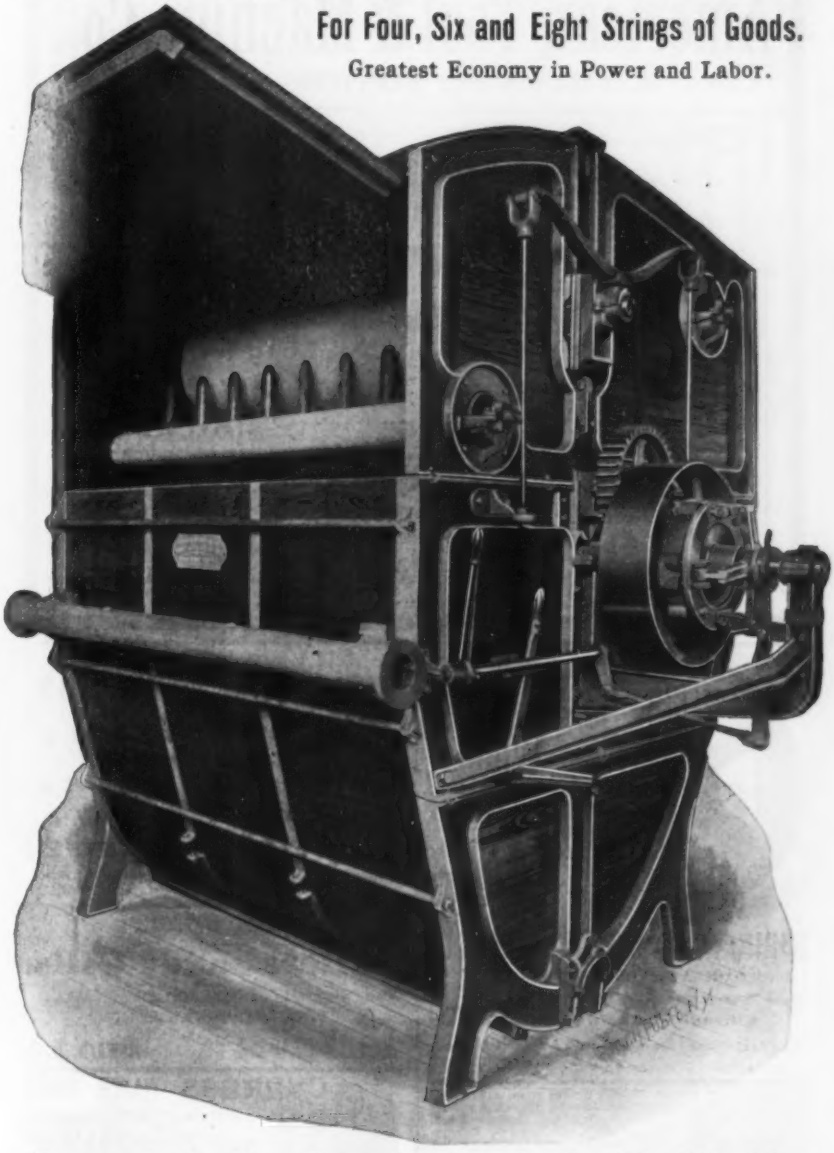
Manufactured by D. R. KENYON & SON, Raritan, N. J.

Successors to KENYON BROS.

LATEST IMPROVED CLOTH WASHER

For Four, Six and Eight Strings of Goods.

Greatest Economy in Power and Labor.



Unequaled for Capacity and Rapid Washing

All Kinds of Heavy and Light Goods are Desired.

Attachment for Washing and Fulling Knit Goods in the String.

RODNEY HUNT MACHINE CO.,

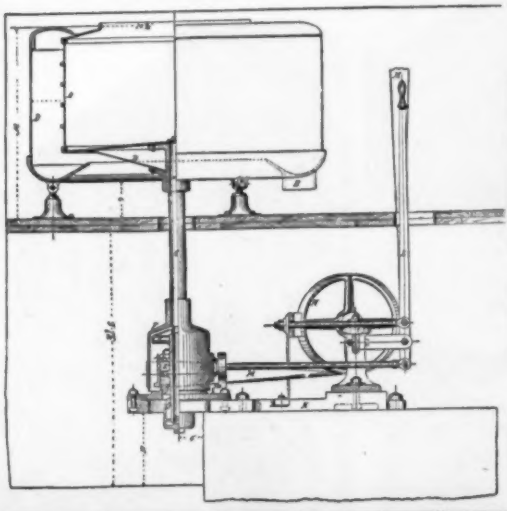
Main Office and Works, ORANGE, MASS. **Boston Office, 70 KILBY ST., Room 87.**

Long Distance Telephone. Send for New Illustrated Catalogue. Telephone No. 1522.

THE

American Tool & Machine Co.,

109 Beach St,, BOSTON, MASS.



Manufacturers of

Weston Hydro Extractors

Special Machines for Acid Work.

Gilbert Wood Split Pulleys

SAGINAW MANUFACTURING CO.

SAGINAW, MICHIGAN, U. S. A.

New York Branch, 44 Dey St.
Chicago Branch, 35 So. Canal St.

Sales Agencies in all the Principal Cities.

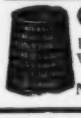
Cable Address: Engrave. A B C and Lieber's Codes.

ELEVATORS, Hoists, Waiters for any place, capacity or weight, Electric, Steam, Hydraulic or Manual Motors, Shafting, Pumps, Boilers, Pipe, Rope, Drug and Paint Mills, Presses, Gearing, Mining and Coining Machinery, Street and Road Making and Sweeping Machinery.
GEO. C. HOWARD, 1783 Barker St., Phila., Pa.

Established 1844.

BENJ. BUCKLEY'S SON,
(WM. J. BUCKLEY)
GUN MILL, PATTERSON, N. J.
Manufacturer of all kinds of
SPINDLES, FLYERS, RINGS, TUBES, CAPS, &C.
FOR
Cotton, Silk, Flax, Woolen and Worsted
MACHINERY.
Roving Spindles and Flyers a Specialty.
Light Forgings. Repairing of all kinds.

COMB CIRCLES
Fallers and Gills,
and all kinds of GILL COMB and CARD PINS, and PICKER TEETH.
WILLIAM CRABB & CO., Newark, N. J.



CYPRESS WATER TANKS
Best in the World. Send for Catalogue.
Write for delivered prices,
H. F. LEWIS & CO., Ltd.
NEW ORLEANS, LA. 316 Baronne st.

STARCH, DEXTRINE and GUMS.

STEIN, HIRSH & CO.,
165 Duane St., NEW YORK.
FACTORIES:
Chicago, Ill. and Hammond, Ind.

Paint and Whitewash Your Mill Without A Brush

By the Spray System which has proved to be quicker, better and cheaper than brush work. All the buildings at World's Fair were painted by our system. No scaffolding needed. In any good sized plant it saves its cost in a short time. Does the work of a dozen men. Applies oil and water paints, kalsomine and white wash.

Prices, No. 1. $40; No. 2, $50; f.o.b. N. Y.

TRIUMPH MACHINE & MFG. CO., - 209-11 Hester St., New York.

DYE STICKS Drying and Sulphur House Poles of Natural Round Water Grown Cedar for **Cotton, Wool, etc. Special Hardwoods** in Standard No. 1 and "Selects" without knots, grades, for **Silk Dyeing. Our Woven Cedar Picket Fence,** is the best and cheapest for mills and all enclosures. Manufactured by, prices and all information from

E. M. HAEDRICH,
311½ Walnut St., Philadelphia.

DYE STICKS.

I make Kettle Sticks, Dry and Sulphur House Poles, also Sticks to suit the Wolstenholm Machine from natural water grown Cedar. I also make Sticks to suit the Klauder, Weldon, and Lorimer machines, singed or plain, with or without copper ferules. Square and flat Drying, Bleaching and Sulphur poles from finer grades of lumber. Poles for rolling rugs on, etc.

Write for prices and mention Textile World.

FRANK BAILEY, Cedar Brook P. O., Camden Co., N. J.

IF YOU WANT COTTON OR WOOLEN MACHINERY

...Why not correspond with...

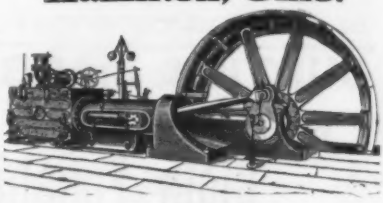
GEO. L. SCHOFIELD,
123 No. Front Street,
PHILA., PA.

Also, Agent for the Weston Hydro Extractor.

SHODDY WM. H. H. SLACK & BRO. Springfield, Vt.

Carbonized Stock A Specialty. **FLOCKS**

THE HOOVEN, OWENS & RENTSCHLER CO.,
Hamilton, Ohio.



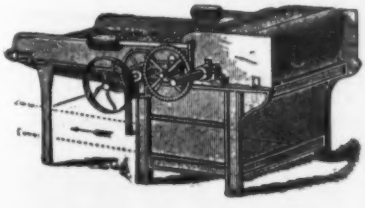
Builders of the

Hamilton-Corliss ENGINE.

Simple, Compound and Condensing, of any size, for all purposes.

New York Office, 39 and 41 Cortlandt St.
Chicago Office, 46 South Canal St.
St. Louis Office, 317 Security Bldg.

GEO. GERRY & SON,
ATHOL, MASS.



Manufacturers of

LUMPERS

WOOL and WASTE DUSTERS,
RAG DUSTERS, NAPPERS,
Improved
CLOTH MEASURING MACHINES.

Lumper and Duster Cylinders Refilled and Repaired.

The American Napping Machine Co.

— OWNERS OF THE —

CHAS. HEAP, U. S. N. M. CO., and
DAVIS & FURBER PATENTS on

NAPPING MACHINES,

Combining the Latest FRENCH, ENGLISH and AMERICAN IMPROVEMENTS.
Manufacturers are Cautioned against Buying or Using Infringing Machines.

SYDNEY HARWOOD, Pres., 53 State St., Boston.
H. H. HEAP, Treas. and Gen. Man., Williamstown, Mass.
C. J. JONES, Selling Agt., 160 West Lehigh Ave., Philadelphia.

DAVIS & FURBER MACHINE COMPANY,

Builders and Selling Agents.

North Andover, - Mass.

CURTIS & MARBLE MACHINE CO.,

MANUFACTURERS OF
Wool Burring, Picking and Mixing Machinery.

Cloth Finishing Machinery

FOR COTTON, WOOLEN, WORSTED, PLUSH GOODS, ETC.
SHEARING MACHINES A SPECIALTY.

Send for Descriptive Catalogue.
New Works, 56 Cambridge St., near Webster Sq. WORCESTER, MASS.

IMPORTANT IMPROVEMENT IN WORSTED SPINNING.

The Bamford Dust Proof and Self-Lubricating Spindle Tube saves oil, prevents clogging with dust and lint, thereby insuring longer life to the tubes, saves labor, maintains uniform speed, **and most important of all**, makes PERFECT YARN. Refer to largest worsted mills.

BAMFORD & SMITH, Pascoag, R. I.
ALSO MFRS. OF
STEEL CAPS AND SPINDLES.
CAPS, FLYERS, TUBES, Etc., REPAIRED.

THE TORRANCE MANUFACTURING CO.

Sole Makers of the TORRANCE PATENT
Self-Acting Balling Machine

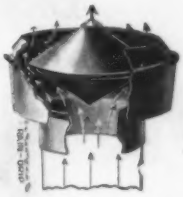
The attention of Woolen Manufacturers is invited to these Machines as convenient labor-saving appliances. The machine can be adjusted to make any size balls to suit lots, and the creel is constructed to carry twice the number of spools used by the old system.

SEND FOR CIRCULAR.

18 & 20 Davis St., E. Newark, N. J.

THE MOST
SATISFACTORY
VENTILATOR

FOR WOOLEN
AND COTTON MILL
BUILDINGS.

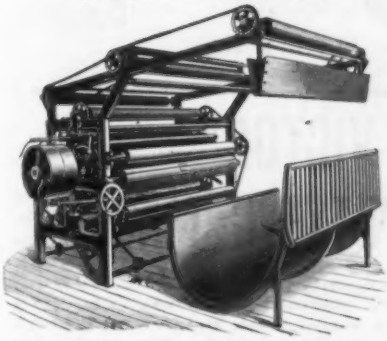


NATIONAL PANCOAST VENTILATOR CO.,

MAIN OFFICE:
723 Drexel Bl'dg., Phila.

BRANCH OFFICES:
New York, Chicago, Boston.

OUR
No. 3 NAPPER
CAN NEVER BE
CAUGHT NAPPING
WHEN IT IS NAPPING.



Parks & Woolson
MACHINE CO.,
Springfield, Vermont, · U. S. A.

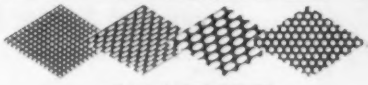
RILEY'S PATENT RIGGING CUTTLING FOLDING MACHINES
For all kinds of Gray or Finished Stuffs, Woolens, Worsteds, etc.
CHAS. A. JOHNSON & CO. SOLE AMERICAN AGENTS.
New York and Providence.

A. J. Beckley & Co.

Garwood, New Jersey.

PERFORATED COPPER
For Wool Scouring, Rensor Boxes and Dyers of Raw Cotton.
Screens Especially for the Woolen Mills. . . . .
Correspondence solicited.

AMERICAN PERFORATED METAL CO



MANUFACTURERS OF
PERFORATED BRASS & COPPER
For Wool Washing Machinery, Rinser Boxes, False Bottoms and Drainers.
171-173 Wooster Street., - - - NEW YORK.
Estimates cheerfully given.

SAVOGRAN
CLEANS WOOL, FLOORS ANYTHING.
INDIA ALKALI WORKS, Boston.

BRANSON MACHINE CO.

506 N. American St., PHILADELPHIA, PA, Pioneer Builders of

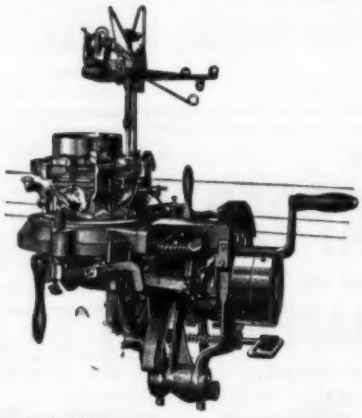
Knitting - Machinery

FOR SEAMLESS HOSIERY.

Hand or Power,

Open Top or Hold Down,

One-half, Three-Fourth or



7-8 Automatic Knitting Machine. All Sizes, all Gauges.

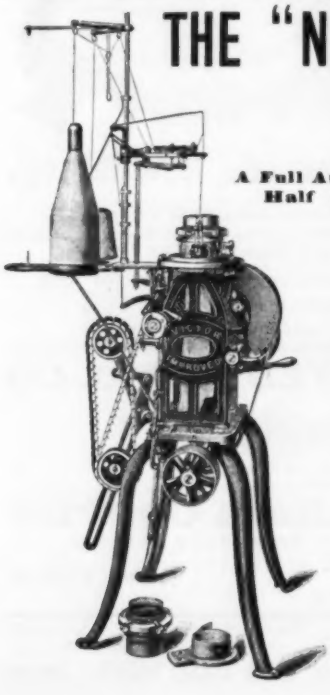
Welt or Two-Feed Ribbers.

Loopers and Parts.

Presses and Boards.

Estimates for Plants Complete.

WRITE FOR INFORMATION AND CATALOGUE.



THE "NEW VICTOR" KNITTING MACHINE

A Full Automatic Seamless Machine for Ladies' Hose, Half Hose and Footing, Misses' and Children's Ribbed Hose; With Reinforcing Thread Automatically Inserted. Thoroughly Interchangeable in All Its Parts.

Built by the Taft, Peirce Mfg. Co. which is a guaranty of perfect workmanship.

MORE SIMPLY CONSTRUCTED
Than any Machine on the Market.

Automatic Yarn-Changer and Plaiter and High Splicer Readily Applied.

Positive and Fully Automatic in ever movement.

American Knitting Machine Co.
WOONSOCKET, R. I.

South and West.
Louis P. Haight, Agt., 109-110 Lyman Building, Muskegon, Mich.

New England and New York.
F. H. Potter, Agt., cor. Stewart and Conduit Sts., Provicence, R. I.

Pennsylvania, New Jersey, Delaware, Maryland and Kentucky.
Howard W. Harley, Agt., 2515 Germantown Avenue, Philadelphia, Pa.

American Bridge Co.

DESIGNERS AND BUILDERS OF

STEEL BRIDGES, STEEL BUILDINGS

...AND...

ALL CLASSES OF METALLIC STRUCTURES.

GENERAL OFFICES:

No. 100 BROADWAY, NEW YORK.

BRANCH OFFICES:

BOSTON, BALTIMORE PHILADELPHIA,
CHICACO, NEW ORLEANS,
PITTSBURC, CLEVELAND, MINNEAPOLIS.

NYE & TREDICK,

MANUFACTURERS OF

Circular Rib Knitting Machinery, Underwear Machinery,

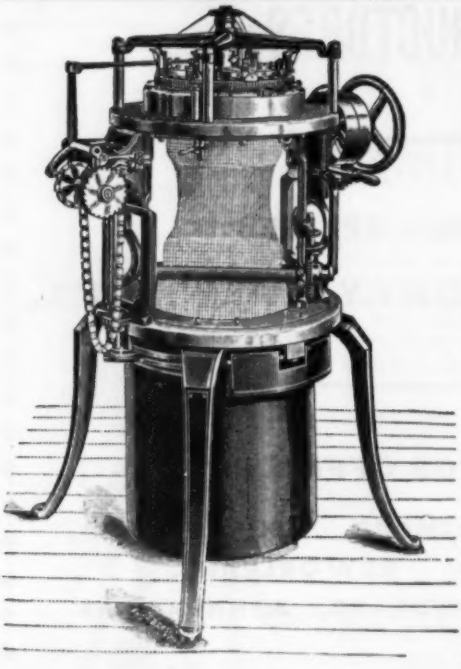
For Ladies' Vests, Combination Suits, Corset Covers, etc.
Men's Underwear, Sweaters, etc.

New Improved Sleeve Machines.
Machines for Rib Hosiery, Rib Tops and Cuffs.

LATEST IMPROVEMENTS ON ALL MACHINES.

MECHANICAL STOP MOTIONS
FOR CIRCULAR RIB KNITTING MACHINES.

OFFICE AND SHOWROOMS:
606 Arch Street, - PHILADELPHIA.



McMICHAEL & WILDMAN MFG. CO.

RIB KNITTING MACHINERY,

AUTOMATIC AND PLAIN,

For all classes of Ribbed Hosiery and Underwear, Combination Suits Sweaters, etc.

ESTABLISHED REPUTATION FOR

Largest Production. Best Quality Fabric. Durability, Economy of Operation.

Full particulars, Description and Samples furnished upon Application to the

McMICHAEL & WILDMAN MFG. CO.

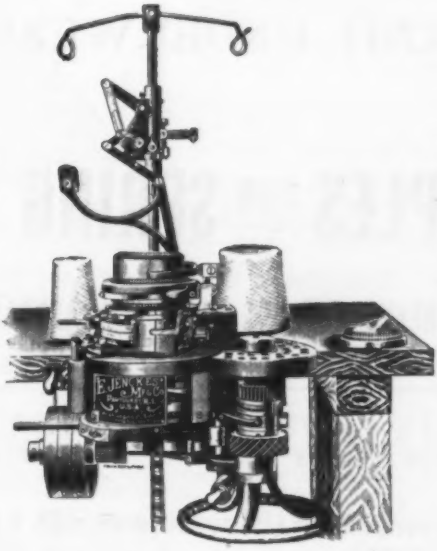
NORRISTOWN. PENNA.

THE INVINCIBLE

FULL AUTOMATIC KNITTING MACHINE

IS ADAPTED TO THE ECONOMICAL PRODUCTION OF ALL CLASSES OF SEAMLESS HOSIERY.

It is the only full automatic machine made to be fastened to a bench, occupying no more space than semi-automatic machines.



It has a simple and positive attachment for putting in and taking out an extra thread in heel and toe automatically.

A simple and positive attachment can be applied for **making high spliced heels and double soles automatically**, at the same time the heel and toe are reinforced by an extra thread. The splicing arrangement is supplied with yarn from a bobbin holding a quantity of yarn, and not from a small cop such as is usually used in devices of this kind.

The only successful yarn changer is applied to this machine. This device changes the yarn automatically at heel and toe, or at any desired point in the knitting of the stocking. It does not require a revolving bobbin which is commonly used in similar devices, but allows the use of a full size winder bobbin or cone for each yarn used. It is perfectly positive in its operation, is simple and well built, and is recommended as filling a popular demand.

In knitting "string work," **a loose course** is put in as a guide for cutting off each stocking. **A loose course can be put in for looping** the toes. This is a great advantage in fine gauges.

Attention is invited to the new method of transferring tops to the needles of machine in knitting Half Hose, and in footing ribbed leg hose.

The method of doing this is entirely new, and must not be confounded with the ordinary method of transferring with a quill ring.

The speed of the machine is reduced just before changing from circular to reciprocatory knitting, thus avoiding all shock. All parts are interchangeable.

By changing cylinders only, the machine will make either fine or coarse gauge of goods.

The Invincible is a compact, light running, full automatic machine, simple in construction, has few parts, runs at high speed, occupies small space, and is put upon the market at a price that defies competition from either full or semi-automatic machines.

E. JENCKES M'F'G. CO.

It may be seen in operation either at our **Factory, at Pawtucket, R. I., U. S. A.** or at our branch office, ROOM 370, BOURSE BUILDING, PHILADELPHIA, PA., U. S. A. Correspondence invited.

LACE EDGINGS AND BRAIDS

... FOR ...

KNIT UNDERWEAR

SAMPLES FOR SPRING 1901

ARE READY AND ARE UNUSUALLY ATTRACTIVE

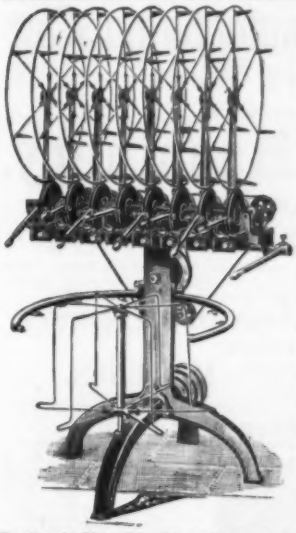
PROMPT DELIVERIES LOWEST PRICES

MONTHLY CAPACITY 30,000,000 YARDS

G. A. Schneebeli & Co.,

NAZARETH, PA.

FLEMING & CHAPIN, 229 Church St., Philadelphia,
Selling Agents.



Back-winding Machine for winding the yarn from imperfect pieces back into skeins.

JAMES TAYLOR,

Knitting Machinery

—FOR—

HOSIERY and UNDERWEAR.

(New and Second Hand.)

Selling Agent for the Celebrated Stafford & Holt Ribbed Underwear Machine. The only Underwear Machine with A PERFECT TAKE-UP. The best on the market.

Builder of the only Practical BACK-WINDING MACHINE. Ravels any class of Knit Goods, including 8-feed Tuck Stitch and Plated Goods.

Largest establishment in America making a specialty of new and second-hand Knitting Machinery, Knitters, Ribbers, Loopers, Winders, Presses, Stop-Motions, Finishing Machines, Dryers, Fleecers, Etc.

WRITE US—If you wish to sell your machinery; if you are in need of machinery.

Catalogue and Circulars on application.

835 Arch Street, - - Philadelphia.

CIRCULAR RIB KNITTING MACHINES,

Carefully designed and well made with Solid Forged Steel Cylinderr and Dials, Segmental Cam Rings, Encased Take-up, Stop Motions, etc. Standard Sizes, Reasonable Prices. Also

KNITTING MACHINE CYLINDERS AND DIALS.

STAFFORD & HOLT. - Little Falls. N. Y

FRANK RITTENHOUSE,

ENGINEER AND MACHINIST.

Good facilities for economical and high grade work. **CYLINDERS AND DIALS TO ORDER.** Gauges & Standards ground at reasonable rates. Also machine jobbing in all its branches promptly attended to.

SHOP: 2706 Hancock Street, Phila., Pa. Telephone 5-27-36.

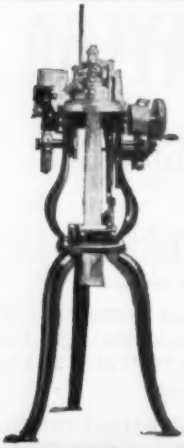
RESIDENCE: 612 Swede Street, NORRISTOWN, PA.

Knitting Machinery

SCOTT & WILLIAMS,

2079 E. Cumberland St., Philadelphia, Pa., U.S.A.

WRITE FOR CATALOGUE.



Pepper Manufacturing Co.

Lakeport, N. H.,

Manufacturers of

Knitting Machinery,

INCLUDING

Pepper's Flat-Ribbed Cuff Machine,

Automatic Welt and Loose Course Machine for Sock Tops. New Circular Stripes with Welt, Loose Course and Striping (Automatic), for Shirt Cuffs, Sock Tops, Hose Legs, Wristers, etc.

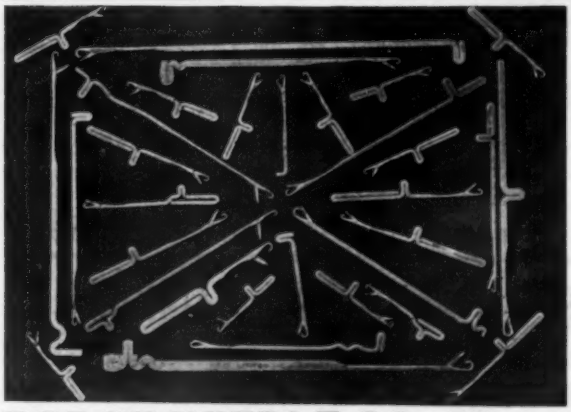
GOLF AND BICYCLE STOCKING MACHINES.

All kinds of

CIRCULAR RIBBED MACHINES,

For Men's Underwear, Ladies' and Misses' Hose Legs & Leggings

CORRESPONDENCE SOLICITED.



LATCH

Needles for all

Knitting Machines

OUR

SUPERIOR

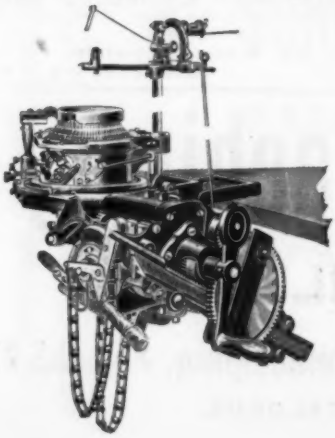
OR

Sunken Rivet Head Needles

will save you money every day in the year.

DODGE NEEDLE CO., Manchester, N.H.

Excelsior Knitting Machine Manufacturing Co.



ALLENTOWN, PA.

BUILDERS OF

EXCELSIOR

7-8 AUTOMATIC KNITTERS,

Adapted for Ladies' Plain Hose, Men's Half Hose or footing Ribbed Hose.

Its Production is Greater than any 7-8 or full Automatic Machine now on the market.

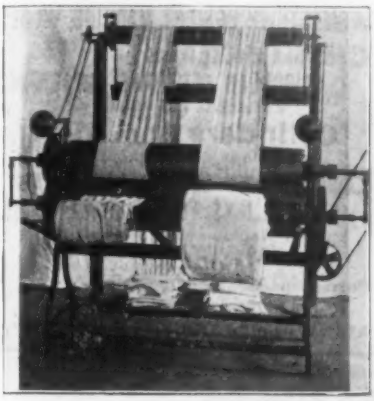
THE FISHER

KNITTING MACHINE COMPANY,

BUILDERS OF

Circular Rib Machines

Of Highest Speed, Less Needle Breakage, Less Seconds, Largest Production.



OUR NEW ROTARY STEAM PRESS for Knit Goods in the Roll.

Steaming, pressing, drying and folding in one operation.

SLEEVERS. Two styles.

STRIPER FOR RIB GOODS.
24 feeds. Cut 14 to inch.

THE UNIVERSAL CLOTH TURNER
with radical improvements.

IMPROVED BRUSHER.

THE UNIVERSAL UPRIGHT DRYER.

Our machine are all of new design from new patterns and of best material and good workmanship and sold at fair prices. Send for catalogue and estimates.

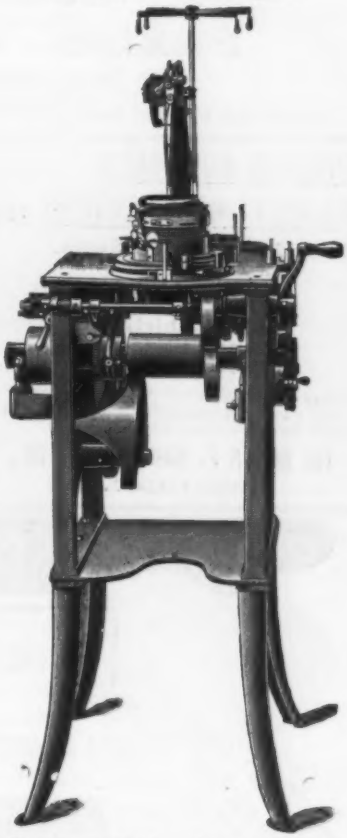
UTICA, N. Y.

ACME

Automatic Knitter,

FOR SEAMLESS HOSIERY.

All Kinds and Gauges.



Best method of transferring ribbed legs and tops.

Greatest production of perfect work at least expense.

For particulars address

Mayo Knitting Machine & Needle Company,

FRANKLIN, N. H.

Philadelphia Office:
Knickerbocker Building,
Cor. 6th and Arch Sts.

½ AND ¾ AUTOMATIC ATTACHMENTS

To Seamless Knitters, make Old Machines into New Ones, and the Best of their respective classes.

Paxton & O'Neill,

127 Bread Street, Philadelphia,

Makers of Wrought Steel Cylinders and Dials for all kinds of Machines.

CIRCULAR AUTOMATIC RIB KNITTING MACHINERY FOR

Combination Suits,
Sweaters,
Richelieu Ribs,
Cuffs,
Ribbed Shirts,
Shaped Swiss Ribs,
Rib Tails, etc.

Over 1000 machines now in operation.
Just now we are making a speciality of 14 and 16 feed machines for stripes.

The HOMER P. SNYDER MFG. CO.,
LITTLE FALLS, N. Y.

GERMANTOWN HOSIERY MACHINE WORKS

CARDIGAN JACKET and CIRCULAR KNITTING MACHINES
For Shirts and Hosiery.

Cylinders and Dials
Of all kinds made and hardened.

GERMANTOWN SKEIN WINDER and LINKS FOR DOUBLE RIBS.
Special Machine and Jobbing Work Promptly Attended to.

Correspondence solicited....
GEORGE W. LINDLEY, Prop.,
5132 Wakefield St., Germantown, Pa

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS. T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA.

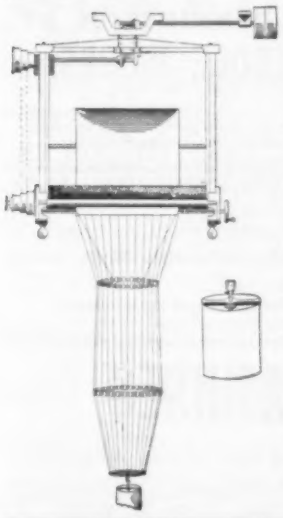
PERFECT FAST BLACK FOR HOSIERY

Process For Sale

Has been adopted by many leading Hosiery Manufacturers.
The new Dubois "Sanitary" Fast Black Process satisfies every requirement It is perfectly fast, costs only 1½ to 2½c. per lb. to produce. Dyes in one dip right from the Knitting Machine, any finish, lisle thread or silk. It is non-poisonous, of uniform color, will not crock, green or tender the goods.
The manufacturer can safely guarantee this black. It is second to none in the world.
The formula is for sale, and competent chemist will go to give personal instruction and start the work.

ADDRESS:

Calmore & Co., Patent Attorneys, 501 Chestnut St., Phila., Pa.



A Radical Improvement
—IN—
Drying Tubular Knit Fabrics.

The new Johnson Vertical Dryer pleases every practical man who sees it, because a glance shows its advantages.

It dry s the cloth straight; it is automatic; only takes up 4 ft. floor space; it stretches and rolls cloth perfe tly; the speed is r gu-lated to suit any condition or goods.

The president of one of the largest factories in New York State says: "No other Dryer can compare with it. I want no other in my plant."

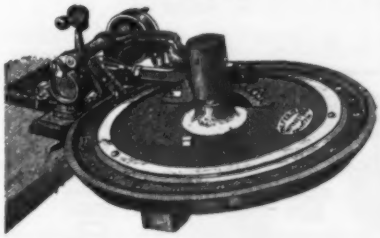
Come and see it if you can or send your foreman. Send for circular anyway

E. M. ANTISDEL, Sole Owner and Manufacturer, Utica, N. Y.

WM T LIVTNER, Gloversville, N. Y., General Sales Agent for U. S. and Canada.

HEPWORTH & CO.

BUILDERS OF



Loopers and Automatic Knitting Machines.

Lehigh Ave. and Mascher St.,
PHILADELPHIA, PA.

BEATTIES' Patent Loopers.

Wm. Beattie & Son,
COHOES, N. Y.
An Illustrated Catalogue will be sent on application.

EXCELSIOR SEWING MACHINE CO.

W. C. VonBUCHWALD, Prop., Dealer in
SPECIAL SEWING MACHINES FOR MANUFACTURERS.

Sole agent for the Murphy High Speed Double Thread Trimming Machine for Concealed Hosiery Welting and Underwear.
Fabric trimmers put on all makes of machines.
All makes of machines Repaired, Altered and Rebuilt.
Correspondence solicited.

120 NO. 7TH STREET, PHILADELPHIA, PA.

Celebrated Brand PYRAMID "TRADE MARK" **Lacings**

For Underwear, Overshirts and Sweaters,
JOHN CATHCART & CO.,
115 Franklin St., New York.

LACINGS

For Overshirts and Underwear.

Tipped and Tasseled.

HEPNER & HORWITZ. 30 Howard St N.Y.

CHARLES COOPER, **BENNINCTON, VT.,**

KNITTING MACHINE AND NEEDLE WORKS,

MANUFACTURER OF

Flat Rib Knitting Machines, 2 to 5 sections, Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Collarette Attachments, etc., etc. All the latest improvements. Sinkers and all Rib Machinery supplies. Patent Springs for Dyeing Boards. Also Ribbed Anklets made to order. Branch Shop, AMSTERDAM, N. Y.

S. B. ARDREY & SONS, **BRISTOL, PA., U. S.**

Manufacturers of New and Improved

BRUSHING MACHINE, **For Fleecing Knit Goods.**

Carefully constructed, substantially built.

Filtering Oilers, Parts Removable Without Disturbing Frame,

Delicate Adjustment, High Speed with Durability.

NECK SHAPING MACHINES

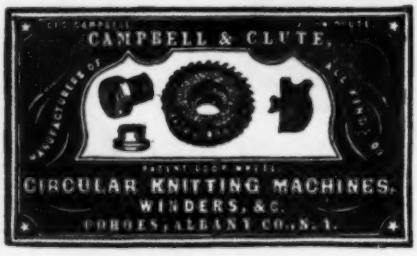
For automatically centering the neck on Underwear Shirts. Crimps from 400 to 500 Doz. PER DAY at a cost of from 25 to 35 cents per 100 doz. Leaves no pencil or chalk marks on goods. Easy to operate. Runs by power. Increases production more than 100 per cent. Curtails the cost of labor 150%.

Send for circulars. See cut and description in July number, page 70.

ECLIPSE MACHINE CO.,

SAUQUOIT, N. Y.

SHIRT Border Machines



Four and Five Section Flat Cuff Machines.

THOMAS KENNEDY,

Successor to N. H. BRUCE, Established 1872,

—COHOES, N. Y.—

SPECIAL MACHINERY

for **Knitting Mills, Collar and Corset Factories.**

CLOTH CUTTERS—Power and Hand.
FOLDING, WINDING AND CUTTING machines, automatic.
POWER NECK MARKERS.
RIB CUTTERS.
Irregular Form

CUTTING MACHINERY

for Cloth, Knit Fabrics, etc.

☞Write for Catalogue.

CRANE MFG. CO.

LAKEPORT, N. H.

Spring Needle Circular Knitting Machine

For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.

A Specialty of Hardened Bladed Burr Wheels with Self-Oiling Brackets.

TEXTILE MACHINE WORKS,

THUN & JANSSEN, Reading, Pa.

Manufacturers of

BRAIDING MACHINES OF SUPERIOR QUALITY

for making Dress Trimming Braids, Cotton Tapes, Underwear Braids, Shoe Laces, Spindle Banding, etc. Winders, **Doublers.** Measuring Machines, Reelers, Singeing and Finishing Machinery. Special machinery.

AMERICAN YARN PRINTING WORKS. **JOHN FORREST** Printer of Cotton, Woolen, Silk and Worsted Yarns and Warps for Woven and Knit Goods. Bleaching of Cotton and Woolen Yarns a Specialty. **134 to 150 North 22d St., Philadelphia, Pa.**

LOYAL T. IVES,
MANUFACTURER OF ALL KINDS OF
Spring Knitting Needles
NEW BRUNSWICK, N. J.

H. LYDALL & FOULDS,
Manufacturers of all kinds of
Knitting Machine Needles, Narrowing Points, Hooks, etc.
Pat. Screw Rivet Balmoral Needles a specialty
MANCHESTER, CONN.

THE MANUFACTURERS' SUPPLIES CO.,
418 Arch St., Philadelphia, Pa.
Standard Knitting Machine Needles,
And all kinds of Sewing Machine Needles.
Parts for Wilcox & Gibbs Mfg., and all Sewing Machines.
Oils, Beltings and General Mill Supplies.
Agents for Excelsior Needle Co., and National Needle Co.

Excelsior NEEDLES
The best hosiery needle in the market.
Manufactured by
Wardwell Needle Co., Lakeport, N. H.

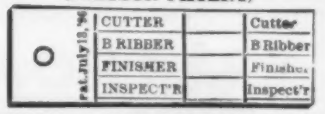
WM. COREY CO.,
Manufacturers of Knitting Machine
Latch Needles,
MANCHESTER, N. H.

Wm. Breedon's Son,
Manufacturers of
Spring Knitting Needles,
And Burr Blades of all kinds.
Amsterdam, N. Y.

ORION TREAT,
MANUFACTURER OF
SCREW RIVETED BALMORAL AND DOUBLE RIB NEEDLES.
(Patented May 6, 1890.)
Manchester Green, - - Conn.
All work guaranteed.

PACE NEEDLE CO.,
Manufacturers of
LATCH NEEDLES
of all kinds. Warranted in every respect.
CHICOPEE FALLS, MASS.
Agents: J. E. Woodhead, 100 Twenty-second Street, Chicago, Ill. Durbrow & Hearne Mfg. Co., 12 Wooster Street, New York. James Taylor, 835 Arch Street, Philadelphia, Pa.

PIECE WORK COUPON TAGS
(STETSON PATENT)



ARRANGED TO MEET YOUR REQUIREMENTS.
Only complete system for keeping account of piece work in Knitting Mills, Shirt and Collar Factories, etc.
E. H. FOSTER & CO.
Sole Manufacturers. COHOES, N. Y.

Our New Improved Light-Running Short Carriage
KNITTING MACHINE

is unsurpassed for full-fashioned Sweaters, Jackets, Leggins, regular Knit Underwear, Union Suits, and all other *regular* and *selvage* Knit Garments. Made with 2 complete yarn carriers and 2 color striping attachment and has the new combined Sweater Stitch, Drop Lock and Tubular Lock. Special Glove Machines. Finger Knitting Machines 3 inches width of needle-bed. Rapid 2-thread Lock-stitch Overseamers.
ARTHUR MUELLER, 754-760 Lexington Ave., BROOKLYN, N.Y.

JAMES H. QUILTER,
Certified Teacher of Frame-Work Knitting. City and Guild, of London Institute, England.

Information given on all subjects relating to the manufacture and finishing of Hosiery and Hosiery Fabrics.

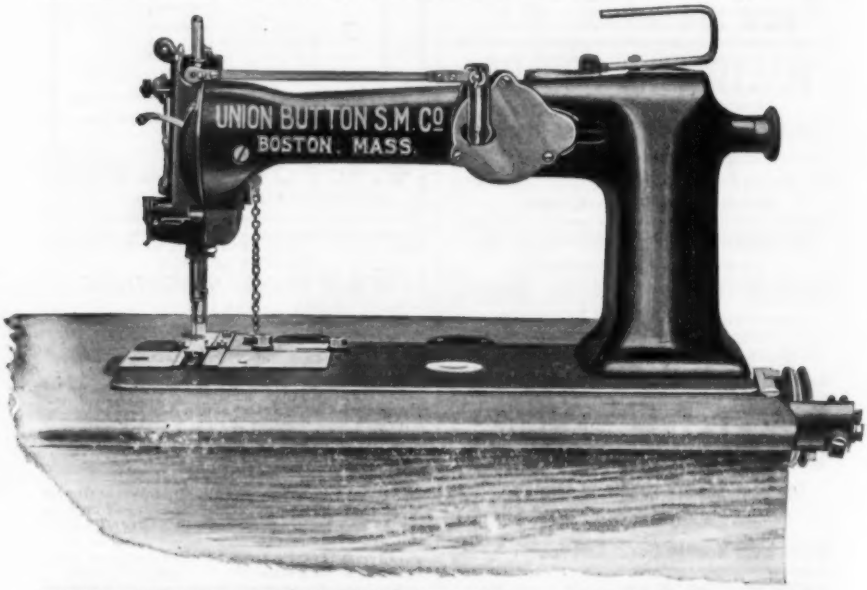
Estimates given for all kinds of machinery used in the knitting and allied trades.

Editor and Sole Proprietor of the
KNITTERS CIRCULAR
AND MONTHLY RECORD.
The only British journal solely devoted to the interest of the hosiery trade.
Annual Subscription, post free, 50 cts.
Send for sample copy.

ADDRESS:
11 Millstone Lane,
LEICESTER, England.

Our New Drawer Strapping Machine

SHOWN BELOW, will sew on straps of any width and thickness, makes either wide or narrow stitching across the straps and will also **BAR** each end of the stitching.



UNION BUTTON SEWING MACHINE CO., 164 High St., Boston.

NO ROYALTY!

The Industrial Mfg. Co., presents for **OUTRIGHT SALE**

The "Industrial" Overseaming Machine

which accomplishes with perfection.

(1) The "Industrial" overedge.
(2) The "Industrial" overseam.
(3) The "Industrial" welt.
(4) The "Industrial" concealed stitch.

THE INDUSTRIAL MFG. CO., Camden, N J.

...We invite correspondence...

THE

Merrow High Speed Crochet

and Scallop or Shell Machines,

For finishing the edges of Knit Goods, Bed Blankets, Horse Blankets, or other fabrics.

For particulars and samples, address

THE MERROW MACHINE CO.,

28 Laurel St., - Hartford, Conn.

Branch Offices and Show Rooms:

Room 374 Bourse Bldg., Phila., Pa. **49 Mohawk St., Cohoes, N. Y**

NEW ENGLAND BUTT COMPANY,

304 Pearl St., Providence, R. I.

BRAIDING MACHINERY,

All Styles and Kinds for Flat and Round Braids.

SOLID SASH AND CURTAIN CORDS.

Shoe and Corset Laces, Banding and all

BRAIDED FABRICS.

WEIMAR BROS., MANUFACTURERS OF

Silk, Cotton, Medium and Superfine, and Non-Elastic

BINDINGS.

Medium and Superfine Tapes a Specialty.

2046 Amber St., Philadelphia.

Telephone Connection.

KROUT & FITE MFG. CO.,

Manufacturers of

SILK and COTTON NARROW FABRICS

Spool Tapes a Specialty.

Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA.

A GOOD LISLE THREAD FINISH CAN BE PRODUCED ON COTTON HOSIERY by my special finishing machine at a trifling cost per dozen. Adds much more to the selling value. A boy can run the machine and finish 40 dozen to 60 dozen per hour. Write me.

SAM'L H. PEEL, Wakefield Mills, Fisher's Lane, Germantown, Pa.

GEORGE W. KAVANAUGH,

IMPORTER AND MANUFACTURER OF

Everything Used In the Manufacture and Trimming of Knit Underwear.

COHOES, N. Y.

LEWIS JONES,

60½ and Media Sts, Philadelphia

GAS ENGINES for city or country.	EFFICIENT
BRUSHING MACHINERY	DURABLE
KNITTING MACHINERY	LOW IN PRICE

THREADS. TAPES. BRAIDS.

CROCHET LACE EDGINGS.

FLEMING & CHAPIN,

229—CHURCH ST.—231

PHILA.

STEPS TO SUCCESS.

Hundreds of ambitious men in this country are studying with The American Correspondence School of Textiles, taking courses in all kinds of mill work, and fitting themselves for better positions and more salary.

WHY DON'T YOU?

Write for free catalogue giving full particulars to C. P. BROOKS, Director, New Bedford, Mass.

NEW BEDFORD TEXTILE SCHOOL.

Instruction in Cotton Manufacturing a specialty.

Machinery from all the leading machine shops.

Universally recognized as the

BEST EQUIPPED

and most complete

COTTON TEXTILE SCHOOL

in the World.

FALL TERM OPENS IN OCTOBER, 1900.

Free Illustrated Catalogue will be sent on application to

C. P. BROOKS, Managing Director,
NEW BEDFORD, MASS.

PHILADELPHIA TEXTILE SCHOOL.

SEVENTEENTH YEAR.

Oldest in America.
Most Complete in the World.

Endorsed by leading Educators and Manufacturers.

COTTON, WOOL, WORSTED AND SILK.

Instruction given in Designing, Weaving, Carding, Spinning, Chemistry, Dyeing and Finishing.

—1900.—

Day classes open October 1st, 1900; Evening Classes open Oct. 8th, 1900.

Special Courses in Textile Chemistry and Dyeing.

For Illustrated Year Book and other information address

E. W. FRANCE, Director,
BROAD AND PINE STS., PHILADELPHIA.

LOWELL Textile School

Thoroughly practical instruction given on

New Machinery in Every Branch of

Textile Manufacturing.

The most complete Textile School in America.

New and Complete Textile Dyeing Laboratory now Open.

Send for Catalogue to

WM. W. CROSBY, Principal
LOWELL MASS.

WATER WHEELS

LEFFEL'S STANDARD, SPECIAL SAMSON & CASCADE

UPRIGHT AND HORIZONTAL.

Suitable for all Heads from 3 Feet to 2000 Feet.

35 Years in the Business.

Designing and building Water Wheels for all purposes and situations. These wheels secure a **High Guaranteed Percentage; Great Steadiness** under variable loads; an **Unequaled Concentration of Power,** and an **Unprecedented High Velocity. Its quickly operating balanced gates** afford **prompt** and **fine regulation** by governor.

Satisfaction Guaranteed where others fail. Write for catalogue of either wheel.

BOILERS AND ENGINES

Upright and Horizontal from 3 Horse-power upwards.

AUTOMATIC AND PLAIN SLIDE VALVE ENGINES.

Send for pamphlet illustrating and describing the Boilers and Engines.

JAMES LEFFEL & CO., Springfield, O., U.S.A.

CHRISTIANA MACHINE CO.

Christiana, Pa.

MANUFACTURERS OF

THE BALANCED GATE

TURBINE WHEEL.

Suitable for Light or Heavy Service.

Globe Outer-Cases and Special Wrought or Cast Iron Flumes,

SUITABLE FOR ANY SITUATION.

GEARING of all kinds, **SHAFTING, PULLEYS,** and every thing required for complete **POWER PLANT.**

Address, P. O. Box 124A

"International" Head

The Best.

INTERNATIONAL SPRINKLER CO.

PHILADELPHIA, PA.

Pres., Clarke Merchant, (Pres. of Merchant & Co., Inc.)

Complete Installments Made

The Company has a *complete equipment* for both the **WET AND DRY SYSTEMS** of Automatic Fire Extinguishers.

Its devices are fully protected by the U. S. Patent Office; and have the *full endorsement* of the *Insurance Companies.*

The "International" Head is in all respects the *best* on the market.

It is the *simplest, most reliable, most certain and most effective.* From 20% to 70% *of cost of insurance saved* by putting "International" Sprinklers in your *Mill, Factory or Store.*

Write for full particulars.

A Southern Department has been established with an Office at 801 Prudential Building, Atlanta, Ga.

Established over 30 Years.

STRAUS & CO. TRADE BOILERINE MARK NEW YORK

BOILERINE

The Unexcelled Boiler Compound.

Removes and Prevents Scale in Boilers, Softens Water and Contains No Acid.

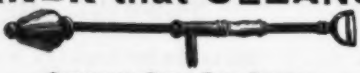
Received the Highest Award and Diploma of General Excellence at Exposition at Atlanta, Ga., 1895.

REFERENCES.
Fulton Bag and Cotton Mills, Atlanta, Ga.
Quaker City Dye Works, Phila., Pa.
Huntsville Cotton Mills, Huntsville, Ala.
Elmira Cotton Mills, Burlington, N. C.
Phœnix Cotton Mills, Nashville, Tenn.

STRAUS & CO.,
55 Broad St., N. Y. City
Satisfaction Guaranteed.
Correspondence Solicited.

The CLEANER that CLEANS CLEAN.

SENT ON TRIAL PREPAID TO ANY ADDRESS.



SAVES COST QUICKLY. CLEANS END TO END. No Moisture. No Scale.

COGGESHALL STEAM TUBE CLEANER.

A TRIAL COSTS YOU NOTHING.

The Coggeshall Mfg. Co., 118 Liberty St., New York City.

BOSTON, MASS. 8 OLIVER ST. · CHICAGO, ILL. 910 MASONIC TEMPLE · CINCINNATI, O. 906 NEAVE BLDG. · PITTSBURGH, PA. CARNEGIE BLDG.
PHILADELPHIA, PA. DREXEL BLDG. · CLEVELAND, O. EUCLID AVE. OPP. PUBLIC SQUARE

BABCOCK & WILCOX BOILERS

THE BABCOCK & WILCOX CO.

STEAM

29 CORTLANDT ST. NEW YORK.

SEND FOR BOOK ON STEAM.

NEW ORLEANS, LA. 339 CARONDELET ST. · SAN FRANCISCO, CAL. 32 FIRST ST. · ATLANTA, GA. 89 EQUITABLE BLDG.

Perhaps Your Employees in a Portion of Your Factory

Are Not Working Today, But Your Shafting Is.

Did you ever think how much fuel, oil, wear and expense would be saved if you could shut off the power from that department with a

FRISBIE FRICTION CLUTCH.

Please write us for full information.

THE EASTERN MACHINERY CO., NEW HAVEN, CONN.

Boilers. Tanks. Stacks.

STEAM and GAS ENGINES.
"OTIS" FEED WATER HEATERS.
STEAM and BELT PUMPS.
THE SUPERIOR PAT'D BOILERS

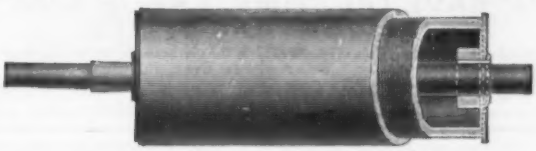
WALTER PENDLETON & CO.,

NO. 13 to 21 Park Row, NEW YORK, N. Y.

—AGENTS FOR—

BOVAIRD & SEYFANG MFG. CO., Bradford, Pa.	STEWART HEATER CO., Buffalo, N. Y.	SUPERIOR BOILER CO., New York.

Rubber Covered Rollers



That are successfully adapted

FOR ALL PURPOSES IN WOOLEN AND COTTON MILLS.

Our Rubber Coverings are strictly high grade. Thousands of users find them satisfactory and economical.

...CORRESPONDENCE SOLICITED...

When it's anything about rubber ask us.

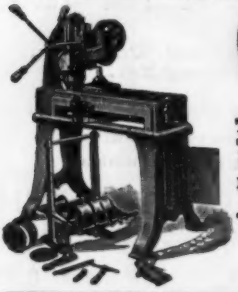
BOSTON BELTING CO.,

James Bennett Forsyth, Mfg. Agt. and Gen. Mgr,

Makers of MECHANICAL RUBBER GOODS.

BOSTON, 256 Devonshire Street. NEW YORK, 100 Reade Street.

MODERATE PRICED



Gear Cutting Machine.

Especially adapted for use in Repair Shops. Now in use in **Two Hundred and Fifty** representative mills, including **Twenty-one** in Fall River, Mass. On application, we shall be glad to submit full particulars, prices, and photographs of latest improvements. Send for our **1900 Pamphlet.**

THE D. E. WHITON MACHINE CO.,

19 Oak Street, New London, Conn.

NATIONAL MERCANTILE AGENCY.

RELIABLE CREDITS.

THE current issue of the "Blue Book," a General Reference Book of Credits, is ready for delivery and contains about 1,200,000 names, with ratings of the most reliable and conservative character.

If your business is conducted on a safe basis, your credit man must know these points about every applicant for credit:—

WHAT IS HE WORTH?
WHAT IS HIS CHARACTER?
HOW DOES HE PAY?

The "Blue Book" tells and is the only Mercantile Agency book that does tell these facts regarding every applicant for credit. Rates of subscription, and book sent for inspection, upon request.

OFFICES:

New York City—Boston—Philadelphia—Baltimore—Chicago—St. Louis—Cincinnati—Buffalo—Pittsburg—Syracuse—Rochester—Cleveland—Utica—St. Paul—Kansas City.

AMELEDEMA OILLESS BEARINGS

SAVE OIL, TIME, LABOR AND PREVENT OIL SPOTS.

Specially adapted for Textile Mills where there are thousands of our bearings in use.

AMELEDEMA OILLESS BEARING CO., Ltd., **Wayne Junction, Phila. Pa.**

Do you know about our new Worsted and Silk Tension Saddle?

Eco Magneto Watchman's Time Detectors.
Employees' Time Registers.

Tel., Private Lines and Interior Systems.
Railroads, Central Stations and Supplies.

Philadelphia Electric Construction Co.

GENERAL CONTRACTORS,

Room 311 Hale Building, **No. 1328 Chestnut St.,** **PHILADELPHIA.**

WALTER DALTON, General Manager.

PL

DIXON'S PERFECT LUBRICATING GRAPHITE.

The most Marvelous Lubricant Known.
Used Dry, or Mixed with Water, Oil or Grease.

NOT AFFECTED BY HEAT, COLD, STEAM OR ACIDS.

An Interesting and Instructive Pamphlet will be sent Free of Charge.

JOS. DIXON CRUCIBLE CO. Jersey City, N. J.

ORGANIZED, 1866.

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO.
HARTFORD, CONN.

Thorough Inspections

AND

INSURANCE against Loss or Damage to Property and Loss of Life and Injury to Persons caused by

STEAM BOILER EXPLOSIONS.

J. M. Allen, President.
W. B. Franklin, Vice-Pres't.
F. B. Allen, 2d Vice-Pres't.
J. B. Pierce, Secretary.
L. B. Brainard, Treasurer.
L. F. Middlebrook, Ass't Sec'y

WHEN IN WANT OF BELTING, Oak Tanned or Solid Round or Rawhide Sewing Machine belting of the best quality; Also Black English Picker Leather,

WRITE HENRY POPHAM & SON,
NEWARK, N. J.

ECO Magneto ELECTRIC WATCHMAN'S CLOCK.

Write for Circular

Eco Magneto Clock Co.,
620 Atlantic Ave., BOSTON, MASS.

ECONOMICAL — DURABLE — SATISFACTORY

EFFICIENT POWER PUMPS.

The Goulds Mfg. Co., SENECA FALLS N. Y.

NEW ILLUSTRATED CATALOGUE
NOW READY
Elevating Conveying Machinery.
SEND FOR COPY.
THE JEFFREY MFG. CO., Columbus, O.

IT'S A FACT

MURESCO. May be used on the walls and ceilings of a factory at less cost, with less labor and better results than with any other wall finish on the market.

Send for color cards and testimonials.

BENJAMIN MOORE & CO.,
MANUFACTURERS,
Brooklyn, N.Y. Chicago, Ill.

Lighting IN Mills

Can best be done by the use of the Lea Enclosed Arc Lamp for 110 volts.

Four times as much light in actual, comparative illumination as from incandescent lamps, using the same amount of current.

We send our catalog free.

Lea Electric Mfg. Co,
Box 1874,
Elwood, Indiana.
W. R. Garton Co., Chicago.

A DRY SUBJECT.

Do you use Cylinder Dryers?

If they are not rapid enough we can double their capacity.

Tell us what you've got and we will tell you what we can do for you.

One mill writes as follows: "Your attachment to our cylinder dryer simply doubles its capacity."

We have helped others and can help you.

We also manufacture Conveyors for all materials, Exhausters, Heaters, Blowers, Fans, Engines and Mechanical Draft Apparatus. Write for particulars.

NEW YORK BLOWER CO.,

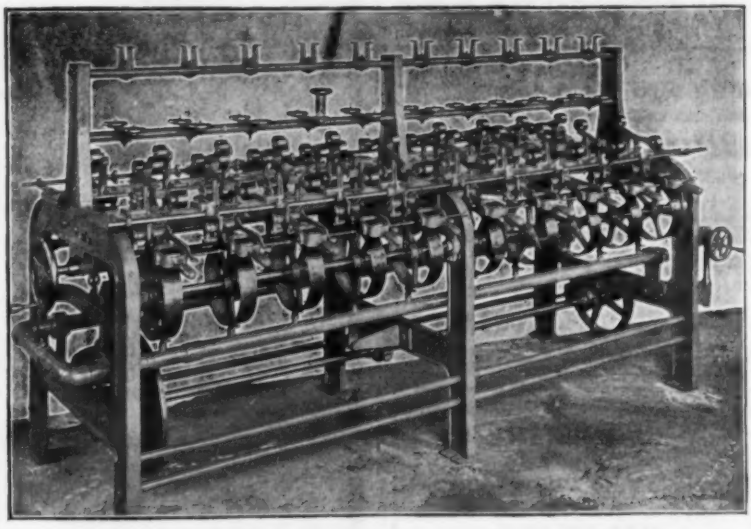
BUCYRUS, O.

New York Office: 39-41 Cortlandt St., New York, N. Y.

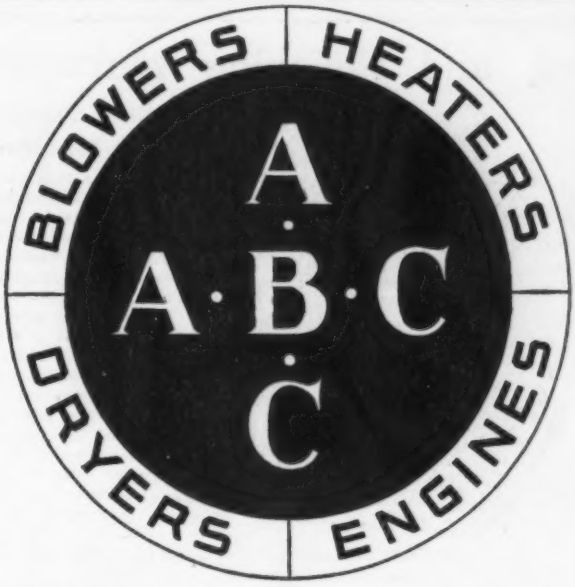
Boston Office: 185 Summer Street, Boston, Mass.

Singeing or Gassing Machine for Yarns.

Send for particulars about this or any other machines for Singeing all kinds of Fabric.



C. H. KNAPP, Wait and Rye Sts., Paterson, N. J.



AMERICAN BLOWER COMPANY,

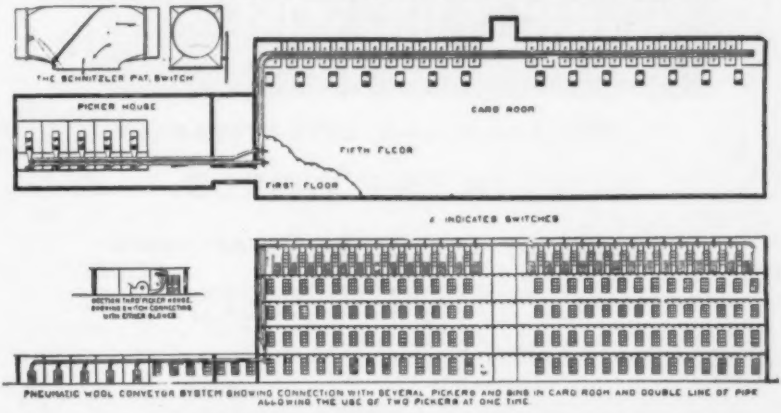
Detroit, Mich.

NEW YORK. - CHICAGO. LONDON, ENG.

THE BOSTON PNEUMATIC CONVEYOR

For the Rapid Handling of Wool. Cotton Stock, Rags, Excelsior, Jute and all kinds of Fibrous Material, wet or dry.

Using the Boston Patent Wool Fan and Patent Switch.



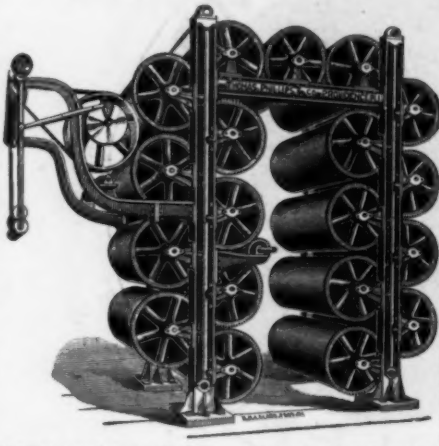
PNEUMATIC WOOL CONVEYOR SYSTEM SHOWING CONNECTION WITH SEVERAL PICKERS AND BINS IN CARD ROOM AND DOUBLE LINE OF PIPE ALLOWING THE USE OF TWO PICKERS AT ONE TIME.

MANUFACTURED ONLY BY

BOSTON BLOWER COMPANY,

HYDE PARK, MASS.

Drying and Finishing Machinery.



Phillips Upright Drying Machine.

The cut shows a 19-can machine with two tiers with intermediate can for continuous drying. We build any arrangement of stringing and furnish any desired number of cans, of any length, either with Phillips Steel Head or Cast Iron. We strongly advise our Steel Head Can. It is a big improvement as eight years' experience has demonstrated. This upright machine enables cloth to run without wide intermediate spaces between the tiers, as in horizontal machine, thus avoiding "scrimps." We also build Horizontal Frames, but on radically different principles from most others. Our illustrated catalogue explains all these points at length and has many plates showing different styles of stringing. It may be had for the asking.

THE THOMAS PHILLIPS CO.,

PROVIDENCE, R. I.

THE LOOM FIXER'S FRIEND.
THE MILL'S ECONOMIZER.

PREVENTS SLIPPING, ACTS INSTANTLY

BEST IN THE WORLD.

Adopted by the U. S. Government

for the Big Belts at the Watervliet Arsenal.
Result of testing Free Samples, such as we would like to mail to YOU.

May we do so?

STEPHENSON MFG. CO.,

ALBANY, N. Y., U. S. A.